

# Contributions to the fauna of hoverflies (Diptera: Syrphidae) of north-eastern Greece, with special focus on the Rhodope Mountains with the Natura 2000 site Periochi Elatia, Pyramis Koutra

[Beiträge zur Fauna der Schwebfliegen (Diptera: Syrphidae) von Nordost-Griechenland, unter besonderer Berücksichtigung der Rhodopen mit dem Natura 2000-Gebiet Periochi Elatia, Pyramis Koutra]

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<b>Abstract</b>	During the years 2007 and 2008, studies of hoverflies (Diptera: Syrphidae) were made in Northern Greece, with a focus on the high mountains of the Rhodopes, but also including some observations in the Falakron and Pangeon mountain ranges and in the coastal lowlands. With field sampling in April 2007 and in August 2008, including five Malaise traps operated in 2007, more than 6800 specimen were collected belonging to 182 hoverfly species, of which 48 species are new to the Greek fauna. During field observations, almost 3900 flower visits were observed. The Greek hoverfly fauna, and especially the fauna of the Rhodope mountain range along the “Green Belt” with Bulgaria, is discussed.
<b>Key words</b>	Syrphidae, Palaearctic Region, Greece, Rhodope Mountains, Falakron, Pangeon, faunistics, new records, flower-visiting, <i>Callicera aurata</i> , <i>Chalcosyrphus pannonicus</i>
<b>Zusammenfassung</b>	In den Jahren 2007 und 2008 wurden Untersuchungen zur Schwebfliegenfauna (Diptera: Syrphidae) von Nordost-Griechenland durchgeführt, insbesondere der Hochlagen der Rhodopen, aber auch der Gebirgszüge des Falakron, des Pangeon und der Küstenregion. Durch mehr als 6800 Freilandbeobachtungen im April 2007 und August 2008 sowie mit fünf Malaisefallen im Jahr 2007 wurden insgesamt 182 Schwebfliegenarten nachgewiesen, darunter 48 neue Nachweise für Griechenland. Ferner wurden 3900 Blütenbesuche registriert. Die Schwebfliegenfauna Griechenlands, insbesondere die des Gebirgszugs der Rhodopen entlang des „Green Belt“ mit Bulgarien, wird diskutiert.
<b>Stichwörter</b>	Syrphidae, paläarktische Region, Griechenland, Rhodopen, Falakron, Pangeon, Faunistik, neue Nachweise, Blütenbesuch, <i>Callicera aurata</i> , <i>Chalcosyrphus pannonicus</i>

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## 1 Introduction

The Greek hoverfly fauna is poorly studied with ‘Syrph the Net’ (StN). SPEIGHT et al. (2010) listing only 269 species for Greece and almost no works have been carried out in northern Greece in the past. StN range data for Greece are based on the Palaearctic catalogue of PECK (1988), a series of papers on the Aegean islands with focus on *Merodon* species (PÉREZ-BANÓN et al. 2000; STÄHLS et al. 2009; VUJIC et al. 2000, 2007), the *Psilota* revision of SMIT & VUJIC (2008), and other records by STANDFUSS & CLAUSSEN (2007) and VAN DE WEYER & DILS (1999). These works focus on the southern part of Greece in the eumediterranean zone. In parallel to this work a faunistic study was carried out by DE COURCY WILLIAMS et al. (2012) in Thrace and Macedonia.

In the years 2007 and 2008 a research project with focus on the Greek Rhodope Mountains in Elatia, close to the Bulgarian border was carried out consisting of:

(1) Some field observations in both years with a number of site visits to other parts of Northern Greece between Thessaloniki and Thassos, including other Northern Greek mountain ranges as the Pangeon and the Falakron mountains.

(2) Malaise-trapping with five traps during the vegetation period in 2007 with the main collecting sites at altitudes of ca. 640 m a. s. l. at Sideronero and 1550 m a. s. l. in Elatia, dominated by high mountain beech, *Picea* and *Abies* forests. It included also sampling in a small unique high mountain transition mire system and along tall herb rich forest- and brook margins.

The project first started in collaboration with Prof. Nikolaos AVTZIS from the Technological Educational Insitute (TEI) in Drama (Greece), and with support from Dr Nikos GRIGORIADIS and Dr Jörg PETERMANN [at that time both Forest Research Institute (FRI) in Thessaloniki, Greece]. Results of this research project are presented including a number of interesting flower-visiting observations in the field.

## 2 Material and methods

Field Sampling in 2007 and in 2008 was usually carried out with standardised field protocols (SSYMANK 1999), but sometimes during field excursions, the activities of some hoverflies, especially flower-visiting, were simply noted without the specimens being collected or retained if their identification was not in doubt.

The sampling localities and dates are given in the following sequence: Country; name of the locality; geographical coordinates in World Geodetic System 1984 (measured with GPS Garmin 45); the biotope or vegetation type, where the samples were taken; in brackets the nearest large

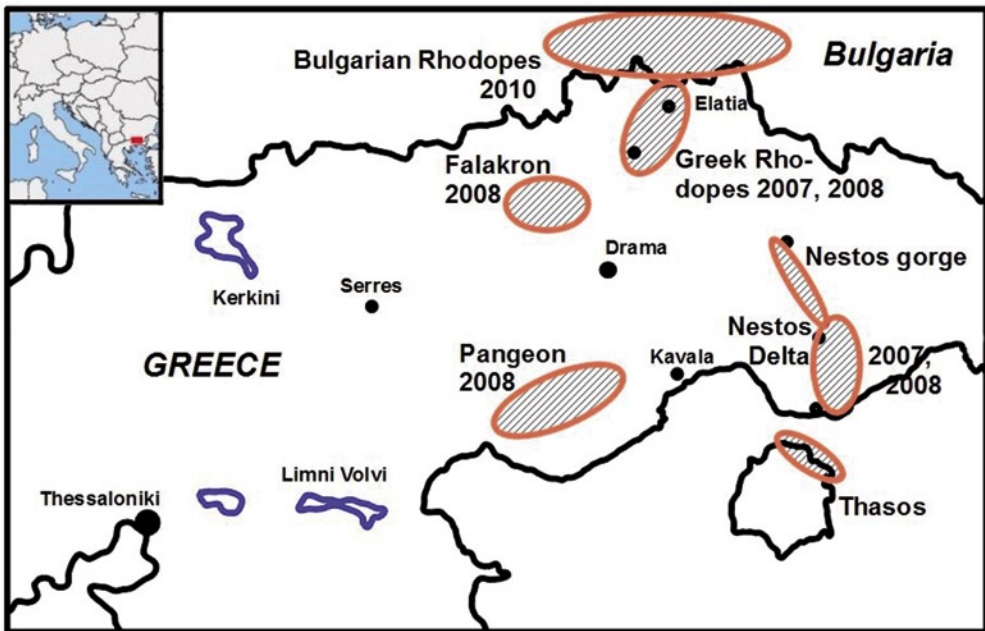


Fig. 1: Overview-Map of the collecting areas 2007 and 2008 in north-eastern Greece.

city/region. Numbers of the localities refer to the database of the author (additional information is available on request). The main sampling areas are indicated in Fig. 1, detailed data of localities are as follows:

## 2.1 Field sampling localities in 2007

For all following field sampling localities: leg. A. SSYMANK.

- No. **6806**: GREECE: Angelochori, 40°29'31"N 2°49'02"E, fragmentary dune vegetation on the border of a salt pit (Thessaloniki), 0 m a. s. l., 12.04.2007.
- No. **6807**: GREECE: Nei Epivates, 40°30'05"N 22°53'53"E, ruderal herb vegetation in the village (Thessaloniki), 10 m a. s. l., 12.04.2007.
- No. **6808**: GREECE: Nei Epivates, 40°30'08"N 22°54'16"E, ruderal herb vegetation dominated by *Rapistrum rugosum* (Thessaloniki), 20 m a. s. l., 13.04.2007.
- No. **6809**: GREECE: Nea Redestos, 40°30'56"N 23°02'20"E, river bed of the Anthemountas with remnant minor water flux and some pools, riparian herb communities with *Ranunculus sceleratus* (Thessaloniki), 40 m a. s. l., 13.04.2007.
- No. **6810**: GREECE: Nea Redestos, 40°30'51"N 23°02'25"E, sewage water treatment, nitrophytic herbs and *Tamarix*-shrub (Thessaloniki), 50 m a. s. l., 13.04.2007.
- No. **6811**: GREECE: Loutra Thermis, Vasilika, 40°30'30"N 23°04'51"E, NAGREF, terrain of the Forest Research Institute (Thessaloniki), 40 m a. s. l., 13.04.2007.
- No. **6812**: GREECE: Loutra Thermis, Vasilika, 40°30'30"N 23°04'51"E, NAGREF, terrain of the Forest Research Institute, arable weed vegetation with plenty of *Scandix pecten-veneris* (Thessaloniki), 40 m a. s. l., 13.04.2007.
- No. **6813**: GREECE: Loutra Thermis, Vasilika, 40°30'34"N 23°04'55"E, NAGREF, terrain of the Forest Research Institute, arable weed vegetation with flowering *Hypocoum imberbe*, *Papaver rhoeas* etc. (Thessaloniki), 20 m a. s. l., 13.04.2007.
- No. **6814**: GREECE: Café Nestos, 40°59'31"N 24°44'26"E, forest margin of a hybrid poplar alluvial forest interspersed with dry sheep pastures with flowering *Euphorbia seguierana* (Chrisoupolis), 10 m a. s. l., 14.04.2007.
- No. **6815**: GREECE: Nestos-gorge, 41°06'09"N 24°45'02"E, steep side valley with temporary brook, with *Cercis siliquastrum* in the tree layer, *Lunaria rediviva* and *Syringa vulgaris* in the understory on scree (Paradisos), 65 m a. s. l., 15.04.2007.
- No. **6816**: GREECE: Café Nestos, 40°59'31"N 24°44'26"E, forest margin of an alluvial hybrid poplar plantation with openings of dry sheep-grazed grassland patches with *Euphorbia cyparissias* and *E. seguierana* (Chrisoupolis), 10 m a. s. l., 15.04.2007.
- No. **6817**: GREECE: Café Nestos, 40°59'38"N 24°44'23"E, dry pasture for sheep, partly overgrown by bushes with a lot of partly flowering *Crataegus monogyna* on the margin of the alluvial hybrid poplar plantation (Chrisoupolis), 30 m a. s. l., 15.04.2007.
- No. **6818**: GREECE: Alatzagiola-lakes, Nestos-delta, 41°00'35"N 24°42'45"E, dry pastures, sheep grazed, partly in succession along a lake shore (Chrisoupolis), 60 m a. s. l., 16.04.2007.
- No. **6819**: GREECE: Between Panagia and Chrisi Ammoudia, 40°44"N 24°44"E, olive groves, partly mesic soil conditions (Island of Thassos), 80 m a. s. l., 18.04.2007.
- No. **6820**: GREECE: Between Panagia and Chrisi Ammoudia, 40°44'15"N 24°43'59"E, single flowering *Crataegus*-bush adjacent to a pine forest with low tree cover (Island of Thassos), 160 m a. s. l., 18.04.2007.
- No. **6821**: GREECE: Limenas, Akropolis, 40°46'43"N 24°43'11"E, ruins with *Smyrniolus olusatrum* tall herb community partly shaded by pine forest with low tree cover (Island of Thassos), 130 m a. s. l., 18.04.2007.
- No. **6822**: GREECE: Limenas, 40°46'52"N 24°43'02"E, *Quercus coccifera*-woodland (Pseudomacchia) in full flower (Island of Thassos), 80 m a. s. l., 18.04.2007.
- No. **6823**: GREECE: Limenas, 40°46'52"N 24°43'02"E, Olive grove with sparse dry meadows with stones and dry stone walls (Island of Thassos), 80 m a. s. l., 18.04.2007.
- No. **6824**: GREECE: Industrial area of Kavala, 40°58'55"N 24°35'49"E, marble debris in a semi-open pasture landscape with *Euphorbia characias* (Petropigi), 80 m a. s. l., 19.04.2007.

- No. **6825**: GREECE: Alatzagiola-lakes, Nestos-delta, 41°00'37"N 24°43'02"E, dry grassland slopes with single *Crataegus* bushes leading down to the lake shore (Chrisoupolis), 40 m a. s. l., 19.04.2007.
- No. **6826**: GREECE: Nestos-Café, 40°59'38"N 24°44'23"E, dry grassland in succession with flowering *Crataegus monogyna*, sheep-grazed close to the alluvial hybrid poplar forest (Chrisoupolis), 30 m a. s. l., 19.04.2007.
- No. **6827**: GREECE: Nea-Karvali road to Xanthi, 40°58'22"N 24°33'04"E, rocky steep goat-pastured slope with *Euphorbia characias* and a few single bushes, 40 m a. s. l., 19.04.2007.
- No. **6828**: GREECE: Nea-Karvali, 40°57'54"N 24°28'56"E, boulders with small sparse dry grassland vegetation, 90 m a. s. l., 19.04.2007.
- No. **6829**: GREECE: Limni Volvi, 40°41'32"N 23°30'40"E, northern lake shore with riparian herb vegetation, single old willow trees, between Mikri Volvi and Megali Volvi (Mikri Volvi), 70 m a. s. l., 20.04.2007.
- No. **6830**: GREECE: Loutra Eleftheron, 40°43'46"N 24°05'49"E, alluvial plane forest, on the margin of the alluvial plain, 20 m a. s. l., 20.04.2007.
- No. **6831**: GREECE: Road to Myrtofito, 40°48'04"N 24°15'46"E, branching from the coastal road, species-rich *Macchia* with *Cistus creticus* and *Euphorbia seguierana* (Kavala), 40 m a. s. l., 20.04.2007.
- No. **6832**: GREECE: Eleftheroupoli, 40°52'05"N 24°18'07"E, *Quercus coccifera*-thickets (Kavala), 50 m a. s. l., 20.04.2007.
- No. **6833**: GREECE: Nea Komi (Drama), 40°58'23"N 24°33'43"E, rocky pastures with scattered olive trees, 80 m a. s. l., 20.04.2007.
- No. **6834**: GREECE: Café Nestos, 40°59'22"N 24°44'38"E, open alluvial poplar forest with *Euphorbia seguierana* on the banks of the river Nestos (Chrisoupolis), 50 m a. s. l., 20.04.2007.
- No. **6990**: GREECE: Forest camp Elatia, 41°28'49"N 24°19'34"E, trapped Syrphidae on the windows in the rooms of the camp (Rhodopes), 1560 m a. s. l., 20.06.2007

## 2.2 Field sampling localities in 2008

For all following field sampling localities: leg. A. SSYMANK.

- No. **7185**: GREECE: Loutra Eleftheron, 40°44'02"N 24°05'43"E, alluvial plane forest with very old trees and gravel islands in the river (probably good water supply for the whole year), 90 m a. s. l., 02.08.2008.
- No. **7186**: GREECE: Lake Koronia, 40°39'22"N 23°09'43"E, riparian zone, reedbed with *Phragmites australis* and *Juncus acutus* along the dried-out lake (Aghios Vasilios), 90 m a. s. l., 02.08.2008.
- No. **7187**: GREECE: Nestos-alluvial forest in the Nestos-gorge, 41°05'49"N 24°45'18"E, *Salix alba* dominated forest with humid tall herb communities of *Angelica sylvestris* (Toxotes), 60 m a. s. l., 03.08.2008.
- No. **7188**: GREECE: Nestos-gorge, 41°05'50"N 24°45'17"E, dry ruderal vegetation along the railroad track with flowering *Foeniculum vulgare* (Toxotes), 80 m a. s. l., 03.08.2008.
- No. **7189**: GREECE: Elatia, Stravorema, 41°30'11"N 24°20'14"E, *Picea abies* forest margin to a humid grassland with *Heracleum sphondylium* and *Knautia midzorensis* flowering (Elatia), 1370 m a. s. l., 04.08.2008.
- No. **7190**: GREECE: Tulumbari, 41°18'19"N 24°12'47"E, dry ruderal vegetation with *Berteroa* cf. *obliqua* on a small mountain pass with a resting place/hut (Sideronero), 940 m a. s. l., 04.08.2008.
- No. **7191**: GREECE: Monastiraki, Nestos-delta, 40°52'06"N 24°46'04"E, inland sand dune with open dune grassland with *Verbascum pinnatifidum* (Keramoti), 30 m a. s. l., 04.08.2008.
- No. **7192/7192a/7192b**: GREECE: Elatia, Forest Camp, 41°28'43"N 24°19'44"E, storage building, *Sambucetum ebuli* with *Sambucus ebulus* in full flower (Elatia), 1470 m a. s. l., 05.08.2008 (no. 7192), 06.08.2008 (no.7192a, 7192b; observations at different times of the day).
- No. **7193**: GREECE: Elatia, 41°28'49"N 24°19'39"E, small brook behind the forest camp, wet tall herb communities and a small forest meadow with abundant *Knautia midzorensis* (not far from Malaise trap, see below) (Elatia), 1530 m a. s. l., 05.08.2008.
- No. **7194**: GREECE: Tsakalos, 41°32'01"N 24°16'33"E, mountain top, open grassland areas around the former protective building (Elatia), 1815 m a. s. l., 05.08.2008.
- No. **7195/7195a**: GREECE: Elatia, forest camp, 41°28'49"N 24°19'35"E, *Picea abies* forest margin with flowering *Verbascum speciosum megaphlomos* near the chapel (Elatia), 1570 m a. s. l., 05.08.2008, again visited on 07.08.2008 (No. 7195a).

- No. **7196**: GREECE: Elatia, 41°28'42"N 24°19'40"E, transition mire and fen area close to the Malaise trap locality no. 6987, mesic to wet tall herb communities, partly pastured by mules (Elatia), 1540 m a. s. l., 05.08.2008.
- No. **7197**: GREECE: Elatia, 41°28'40"N 24°19'29"E, transition mire and fen, margins of the mire with abundant flowering *Mentha longifolia* (Elatia), 1560 m a. s. l., 06.08.2008.
- No. **7198**: Elatia, 41°29'32"N 24°19'40"E, humid tall herb fringes within the *Picea abies* forest with *Sambucus ebulus*, *Epilobium angustifolium*, *Doronicum austriacum* etc. (Elatia), 1540 m a. s. l., 06.08.2008.
- No. **7199**: GREECE: Elatia, 41°28'41"N 24°19'43"E, transition mire core area with *Eriophorum angustifolium*, *Parnassia palustris*, *Juncus articulatus* (Elatia), 1560 m a. s. l., 06.08.2008.
- No. **7200**: GREECE: Elatia, 41°28'46"N 24°19'27"E, timber storage place opposite the forest camp, close to the *Picea abies* forest margin, rich tall herb vegetation with *Verbascum*-species (Elatia), 1600 m a. s. l., 06.08.2008.
- No. **7201**: GREECE: Aggitis, 41°13'11"N 23°53'39"E, alluvial plane forest close to the cave-entrance, humid tall herb communities along the river banks and on the slopes, with a small flush (Prosotsani), 120 m a. s. l., 07.08.2008.
- No. **7202**: GREECE: Tulumbari, 41°18'20"N 24°12'48"E, small hill with ruderal vegetation dominated by flowering *Berteroa obliqua* (Livadero), 940 m a. s. l., 07.08.2008.
- No. **7203**: GREECE: Elatia to Skaloti, 41°27'59"N 24°19'17"E, *Doronicum austriacum*-tall herb community (Elatia), 1550 m a. s. l., 07.08.2008.
- No. **7204**: GREECE: Elatia, forest camp, 41°28'49"N 24°19'38"E, small valley with a brook and a small forest meadow recently left unattended with abundant *Knautia midzorensis* (Elatia), 1570 m a. s. l., 07.08.2008.
- No. **7205/7205a/7205b**: GREECE: Petroussa-Volakas, 41°15'14"N 23°58'17"E, Manganese extraction pit with excavated blackish debris/ soils, perennial species rich ruderal vegetation (Volakas), 500 m a. s. l., 08.08.2008, visited again 09.08.2008 (No. 7205a) and 10.08.2008 (7205b).
- No. **7206**: GREECE: Pirgon, 41°14'43"N 24°00'48"E, pastures with *Quercus coccifera*-shrubs and *Euphorbia seguierana niciciana*, close to Falakron-mountain (Volakas), 580 m a. s. l., 08.08.2008.
- No. **7207**: GREECE: Falakron, 41°17'54"N 24°02'52"E, small valley with pastures, abundant *Euphorbia seguierana niciciana*, close to the forest limit of *Pinus nigra* (Volakas), 1460 m a. s. l., 08.08.2008.
- No. **7208**: GREECE: Falakron, 41°17'42"N 24°04'24"E, ascent to the mountain top, steep slopes with mountain meadows, partially dry with *Stipa pulcherrima* (Volakas), 1930 m a. s. l., 08.08.2008.
- No. **7209**: GREECE: Falakron, 41°18'27"N 24°02'58"E, alpine meadow of the southern slope above the tree limit with *Scabiosa ochroleuca* (Volakas), 1640 m a. s. l., 08.08.2008.
- No. **7210**: GREECE: Falakron, 41°17'23"N 24°01'36"E, alpine meadow on the southern slope in a small depression with *Mentha longifolia* (Volakas), 1330 m a. s. l., 08.08.2008.
- No. **7211**: GREECE: Falakron, 41°18'54"N 24°03'12"E, northern slope, alpine pasture above the tree limit with scattered *Juniperus oxycedrus*-shrubs (Volakas), 1690 m a. s. l., 09.08.2008.
- No. **7212**: GREECE: Falakron, 41°17'52"N 24°00'25"E, herb fringes in a rocky beech forest with *Mycelis muralis*, *Euphorbia seguierana niciciana* and *Torilis japonica* (rocky slope along the road), (Volakas), 1100 m a. s. l., 09.08.2008.
- No. **7213**: GREECE: Falakron, above Volakas, 41°18'00"N 23°59'46"E, pastures surrounded by forest, with some *Ostrya carpinifolia*- and *Fagus sylvatica*-shrubs (Volakas), 1000 m a. s. l., 09.08.2008.
- No. **7214**: GREECE: Road junction to Volakas, coming from the direction of Drama, 41°16'49"N 23°58'53"E, dry rocky valley (with a sheep trail), thorny bushes along a small rocky pasture (Volakas), 620 m a. s. l., 09.08.2008.
- No. **7215**: GREECE: Alatzagiola-lakes, 41°00'42"N 24°42'31"E, riparian reedbed with *Pulicaria dysenterica* (Chrysoupoli), 70 m a. s. l., 10.08.2008.
- No. **7216**: GREECE: Close to the road junction to Volakas (from the direction of Drama), 41°15'59"N 23°58'19"E, pastures in a valley with extensive *Rubus fruticosus*-thickets (Volakas), 530 m a. s. l., 10.08.2008.
- No. **7217**: GREECE: Pangeon, northern slope, 40°55'43"N 24°09'17"E, Sambucetum ebuli in a mixed forest of *Tilia tomentosa* (Paleochori), 660 m a. s. l., 11.08.2008.
- No. **7218**: GREECE: Pangeon, 40°55'39"N 24°09'20"E, *Taxus baccata*-rock-alluvial forest, dried out steep bed of the brook in a very steep gorge, filled with up to 2.5 m diameter boulders (Paleochori), 630 m a. s. l., 11.08.2008.
- No. **7219**: GREECE: Pangeon, 40°55'46"N 24°09'17"E, *Tilia-Castanea* mixed forest on the northern slope, wet ditch along the forest track with *Tussilago farfara* und *Ambrosia* cf. *tanacetifolia* (Paleochori), 560 m a. s. l., 11.08.2008.

- No. **7220**: GREECE: Pangeon, 40°56'23"N 24°10'20"E, pasture with bracken (*Pteridium aquilinum*) and *Mentha longifolia*, on the margin of an alluvial plane forest, just above the village of Paleochori, 250 m a. s. l., 11.08.2008.
- No. **7221**: GREECE: Pangeon, 40°56'01"N 24°11'33"E, forest margins in the *Castanea sativa*-coppice forest with *Cichorium intybus* and *Ambrosia cf. tanacetifolia* (Paleochori), 570 m a. s. l., 11.08.2008.
- No. **7222**: GREECE: Nestos delta, Monastiraki, 40°52'35"N 24°44'22"E, irrigation channel between corn fields, reed vegetation and single plants of *Foeniculum vulgare* on the margin (Keramoti), 20 m a. s. l., 12.08.2008.
- No. **7223**: GREECE: Nestos-delta, Monastiraki, 40°52'10"N 24°47'25"E, poplar plantation close to the mouth of the Nestos with *Peucedanum aegopodioides* (Keramoti), 5 m a. s. l., 12.08.2008.

### 2.3 Malaise-trapping localities and the Natura 2000 site Periochi Elatia, Pyramis Koutra

Malaise traps in north-eastern Greece were installed on the 14th April 2007 as soon as melting snow allowed passage along the access road to Elatia. Traps were emptied whenever possible about once a month (Tab.1) and operated for about five and a half months until the beginning of October. Three Malaise traps were operated in the surroundings of Elatia within the Natura 2000-site, one trap at lower altitude in Sideronero and one trap in the Nestos delta. The Malaise trap on the Nestos river (locality no. 6985) was quickly overgrown by new branches of a poplar-tree stretching over the river and thus shaded relatively early in the year. Furthermore it burned down and had to be replaced because of a quick forest fire in the “wool” from the poplar flowers. Also in the transition mire (locality no. 6987) a mule showed too much interest and ruined the trap, so not all periods yielded insects.

- No. **6985** (MF1): GREECE: Chrisoupolis, Nestos Café, 40°59'29"N 24°44'35"E, alluvial hybrid poplar plantation on the banks of the river Nestos (Chrisoupolis), 15 m a. s. l., leg. S. Douth & A. Ssymank.
- No. **6986** (MF2): GREECE: Sideronero, 41°22'04"N 24°14'04"E, house garden, ruderal vegetation, just below the church of Sideronero, 640 m a. s. l., leg. J. Petermann & A. Ssymank.
- No. **6987** (MF3): GREECE: Forest camp Elatia, 41°28'42"N 24°19'40"E, transition mire, surrounded by *Picea abies* forest, Rhodopes (Elatia), 1520 m a. s. l., leg. J. Petermann & A. Ssymank (Fig. 3).
- No. **6988** (MF4): GREECE: Forest camp Elatia, 41°28'48"N 24°19'39"E, small brook with wet tall herb communities, surrounded by *Picea abies* forest, Rhodopes (Elatia), 1550 m a. s. l., leg. J. Petermann & A. Ssymank.
- No. **6989** (MF5): GREECE: Forest camp Elatia, 41°28'51"N 24°19'34"E, margin of a *Picea abies* forest directly behind the buildings of the camp (Elatia, Rhodopes), 1575 m a. s. l., leg. J. Petermann & A. Ssymank.

The Natura 2000 site GR1140003 “Periochi Elatia, Pyramis Koutra” (Prefecture of Drama) is protected as SCI (Site of Community Interest) since September 2006. An electronic description of the site is available on the EU public viewer, <http://natura2000.eea.europa.eu> (last accessed 02.09.2011). The Natura 2000 site has a size of 7447 ha and ranges from an altitude of ca. 920 to 1810 m a. s. l. (Fig. 2). Almost 80 % of the site are covered by coniferous woodland, another 12 % by deciduous woodland. The whole site protects habitats of Annex I of the Habitats Directive on ca. 55 % of its territory with mainly Rhodope *Picea abies* / *Abies alba* forest (habitat 9410; 38 %), a small proportion of high mountain acidophilous beech forest (9110; 6 %), transition mires (7140; 5 %, which is certainly overestimated) and a number of other habitats in smaller proportions, such as relatively species-rich tall herb communities (6430) with *Cirsium appendiculatum*, *Knautia midzorensis*, *Epilobium angustifolium*, *Doronicum austriacum*, *Nepeta nuda* etc.

### 2.4 Determination of hoverflies and plants

For the determination of hoverflies a number of identification keys such as VAN DER GOOT (1981), VAN VEEN (2004) and the keys of ‘Syrph the Net’ (SPEIGHT & SARTHOU 2010) were used as well

**Tab. 1:** Trap emptying periods for the Malaise traps in north-eastern Greece in 2007. Abbreviation: MF = Malaise trap. Remarks: The crosses indicate the emptying dates of each Malaise trap, empty spaces in each period reflect gaps in the material collected due to destroyed traps or sampling bottles. Additional information see text.

period	date	locality numbers				
		6985 MF1	6986 MF2	6987 MF3	6988 MF4	6989 MF5
1	02.05.2007	x	x			
	03.05.2007		x	x	x	
2	21.05.2007	x				
	22.05.2007		x	x	x	x
3	22.06.2007		x			
	27.06.2007		x	x	x	x
4	27.07.2007		x	x	x	x
5	03.09.2007		x	x	x	x
6	02.10.2007	x	x	x	x	x

as the reference collections of the author. For the following genera additional keys were used: *Callicera* (SPEIGHT 1981), *Cheilosia* (e. g. VUJIC & CLAUSSEN 1994, BARKALOV & STÄHLS 1997, CLAUSSEN & STÄHLS 2007, CLAUSSEN 1998), Chrysogasterini (VUJIC 1999), *Eumerus* (STACKELBERG 1961, VUJIC & SIMIC 1995–1998), *Epistrophe* (DOCZKAL & SCHMID 1994), *Eupeodes* (DUSEK & LASKA 1976, MARCOS-GARCIA & LASKA 1983, MAZANEK et al. 1998), *Myolepta* (REEMER et al. 2005), *Neoascia* (BARKEMEYER & CLAUSSEN 1986), *Sphagina* (THOMPSON & TORP 1986, DOCZKAL et al. 1995, VUJIC 1990), *Spilomyia* (VAN STEENIS 2000) and Xylotini (SPEIGHT 1999).

Nomenclature follows the German checklists (SSYMANK et al. 1999, DOCZKAL et al. 2002, SSYMANK et al. 2011), for species not listed in either of these works, the database of SPEIGHT et al. (2010) was followed. Critical species were checked if possible with male and female specimen by Claus CLAUSSEN (Flensburg, Germany) in the genus *Cheilosia* [marked with “CC” in the results tables], by LIBOR MAZANEK (Oloumuk, Czech Republic) for the genus *Eupeodes* [marked with “LM”], by Ante VUJIC (Novi Sad, Serbia) for the genus *Merodon* [marked with “AV”], and by DIETER DOCZKAL (Gaggenau, Germany) for selected Syrphini, especially *Dasysyrphus* [marked with “DD”].

Determination of plants was done with a local floristic work on the area of Elatia (ELEFTHERIADOU 1992) and the Greek mountain flora (STRID 1986, STRID & TAN 1991). In addition if plants were not covered by these works LAFRANCHIS & SFIKAS (2009a, 2009b), Flora Europaea (TUTIN et al. 2010a–2010e) was used. Eckhard SCHRÖDER (Bonn, Germany) helped with some of the plant determinations.

### 3 Results

#### 3.1 Field sampling in 2007

During field sampling from 12th to 20th April 2007 a total of 853 observations were obtained from 49 hoverfly species (Tab. 3). Most of the sampling was done in the lowlands as at higher altitudes at that time no flowers existed and there were still remnants of snow on northern slopes.



Fig. 2: Rhodope-Mountains, Elatia.



Fig. 3: The transition mire close to the forest camp Elatia with the Malaise trap and Jörg PETERMANN, changing the bottle.

The most abundant hoverflies were *Sphaerophoria scripta* (n = 165), *Myathropa florea* (n = 95), *Episyrphus balteatus* (n = 94) and *Chrysotoxum vernale* (n = 88). On the other hand the percentage of species with one single observation only was, at > 30 %, relatively high. In a single observation



protocol/locality usually less than 8 species of hoverflies were recorded. Exceptions with high species numbers were the following localities, mostly connected to water resources either to river situations or to lakes, together with an existing supply of flowers available to hoverflies:

1. Lakes and lakeshores including flowering bushes close to the lake shore.
  - Limni Volvi lake shore (locality no. 6829 with 9 species);
  - Alatzagiola lake and ponds (locality no. 6825 with 9 species).
2. Rivers and river beds of temporary water courses as long as some water still remained.
  - River Nestos delta with patchy remnant alluvial forests, mostly hybrid poplar plantations and forest margins (locality no. 6817 with 10 species, locality no. 6826 with 17 species, the highest species number recorded in April 2007);
  - Nestos gorge (locality no. 6815 with 15 hoverfly species);
  - River Anthemountas with remnant water holes (locality no. 6809 with 11 hoverfly species).

In spring, in some places, ruderal or arable weed vegetation still is humid enough to be well developed and then that also attracts hoverflies, examples are localities no. 6807 and 6813.

### 3.2 Field sampling in 2008

Field sampling in August 2008 (02.08.–12.08.2008) was carried out as much as possible in higher mountain areas, as the coastal plains and lower hill zone were dry and almost no green vegetation with flowers were present. In total, 44 field protocols were obtained with the majority in the Rhodope mountains (17 protocols) and in the Falakron mountain (13 protocols), while in the coastal mainly calcareous and therefore dry Pangeon mountain only 5 protocols were made and the remaining 9 protocols were lowland habitats (Tab. 4). The vegetation of the higher mountains of Falakron and Pangeon-mountains is described in SCHREIBER (1998). The flora of the high mountains of the Rhodopes was investigated by ELEFThERiADOU (1992), as well as a detailed specific study on the bog system in Elatia (PAPAZISIMOU et al. 2002). For the habitat descriptions of the sampling localities see list of localities in chapter 2. In total 4225 hoverfly observations were made from 85 hoverfly species. The species number was highest with 60 species in the Rhodope mountains, while the Falakron (which is drier in comparison to the Rhodopes and more heavily grazed) with a comparable number of field protocols had only 24 species. Coastal lowlands and the Pangeon mountain range had 21 and 27 species respectively, however here the field effort (number of protocols) was much less.

As expected in the summer observations, only five species, *Eristalis tenax* ( $n = 1743$ ), *Syritta pipiens* ( $n = 483$ ) and three other *Eristalis*-species (*E. arbustorum*, *E. nemorum*, *E. similis*), each of which between 300 and 400 specimen were abundant having more than 5 % of all observations. Unlike in most middle-European habitats, *Eristalis similis*, a typical mediterranean species, which, in warm years, migrates far north, is among the abundant species and can, in some places, be even more abundant than *Eristalis tenax*. High flower fly numbers of  $> 100$  for one observation protocol occurred mainly in the Rhodope mountains and to a lesser extent also in the Falakron mountain. Species diversity (here species number per observations protocol) was also highest in the Rhodope mountains with several high mountain localities around Elatia above 15 and up to 23 species (the transition mire) per protocol, while in the Falakron and Pangeon mountain species numbers were mostly below 10, with an exception in a steep north-exposed ravine of the Pangeon with yew trees (*Taxus baccata*) and *Sambucus ebulus* on the roadside still in flower (localities no. 7217, 7218).

In this place also *Spilomyia saltuum* was observed at an altitude of 660 m a. s. l., while being present in the high altitudes of the Rhodopes around Elatia according to Malaise trap catches (see below). For the Greek fauna a list of 15 species is new from these observations.

### 3.3 Malaise traps in 2007

The five Malaise traps operated in the vegetation period 2007 in Northern Greece caught 1735 hoverflies with 144 species (Tab. 5). The trap on the Nestos river near Chrysoupolis (locality no. 6985) had a very low catch of only 32 specimen with 11 species. This is partly due to shading, and of course to only three emptying intervals that yielded material (see chapter material & methods). Thus the species number is certainly not representative for the site as close-by collecting sites of the direct observations showed. The only species not present in the other traps of the Rhodope mountains was *Criorhina pachymera*, a hoverfly closely associated with poplar trees in the alluvial forest of the Nestos delta. The other traps in the Rhodope mountains had widely differing numbers of specimen and species numbers. The catch was low both in the ruderal place inside a garden in the centre of the village of Sideronero (locality no. 6986, only chosen as fenced site because the whole landscape at this altitude of 640 m a. s. l. was heavily and regularly sheep-grazed) with only 24 species and on the high mountain *Picea abies* forest margin behind the forest camp Elatia (locality no. 6989) with 20 species. The latter has almost no flowering plants and is an acidic forest margin dominated by mainly Poaceae and ferns and therefore is not very attractive to hoverflies.

Completely different both in a very high catch and in a high species diversity were the two high mountain trap localities at Elatia, no. 6987 (the transition mire, with 57 % of the whole Malaise trap catch; Fig. 3) and no. 6988 (small brook with tall herb vegetation with 28 %). For the Rhodope mountains 143 species were recorded with four Malaise traps in the year 2007, including 54 new species to the Greek fauna (asterisked in Tab. 5).

*Eupeodes* “spec. 1” is a species which has been described by DUSEK & LASKA (1976: 207) as a possible alpine subspecies of *Eupeodes nielseni*, and was in the description excluded from the type series. The characters given already in this paper are present in the Greek material, but a final solution for this taxon is still pending. Apart from this species another two undescribed species were in the material: One *Melanostoma mellinum* agg. (with black hairs on the mesoscutum and reduced smaller spots on tergite 2) and a still undescribed species of the *Dasyrphus venustus* group (= *Dasyrphus* aff. *venustus* “1” sensu DOCZKAL).

In total the material studied from over 70 different localities including 5 malaise traps in Northern Greece included over 6800 observations/ records and resulted in 182 species. For the first time Syrphidae were collected in the Greek Rhodope mountains close to the border to Bulgaria. Compared to the preliminary checklist of Syrph the Net 2010 (SPEIGHT et al. 2010) with 269 species listed for the whole of Greece, a remarkable number of 48 new species to the fauna of Greece were recorded (asterisked in the Tab. 3–5) which brings the Greek checklist to a minimum of 359 species (including the recent additions by DE COURCY WILLIAMS 2012).

Typical mountain species of the Rhodope mountains new for the Greek fauna are e. g.:

- Many forest species linked to dead wood: *Chalcosyrphus pannonicus*, *C. piger*, *C. nemorum*, *Xylota jacutorum*, *X. florum*, *X. tarda*, *Temnostoma bombylans*, *T. vespiforme* and *Blera fallax*.
- Furthermore several *Merodon* species, *Cheilosia* species like *C. pictipennis*, *C. gigantea* and *C. chlorus*, *Pipiza quadrimaculata* and *P. lugubris* are new for the Greek fauna. Finally the material includes three undescribed species as stated above (*Melanostoma mellinum* group, *Eupeodes* spec., *Dasyrphus venustus* group).

### 3.4 Flower-visiting, including observations of *Callicera aurata* (Rossi)

In April 2007 in total 458 flower visits were observed on 15 plant species of 37 hoverfly species (Tab. 6). Most flower visits were recorded on *Crataegus monogyna* (Rosaceae) with 32 % of all observations ( $n = 147$ ). At the same time this white-flowering bush also attracted the highest number of hoverfly species with 20 species and had exclusive hoverfly visitors in numbers of *Criorhina floccosa* and *Criorhina pachymera* in the alluvial plain of the Nestos river near Chrysoupolis. *Euphorbia cyparissias* was, with 26 % of all flower visits ( $n = 117$ ) almost equally important for hoverflies, but only 8 hoverfly species visited this plant. Other plants with more than 5 % of the flower visits were *Ranunculus sceleratus* (9 %), *Euphorbia helioscopia* (8 %), *Euphorbia seguierana* (7 %) and *Smyrniolum olusatrum* (6 %). The widest range of hoverfly species visiting a plant species had besides *Crataegus monogyna* the plants *Ranunculus sceleratus* (11 hoverfly species), *Euphorbia cyparissias* and *E. seguierana*, each with 8 hoverfly species. Also remarkable is *Quercus coccifera*, which forms dense thickets and woodlands on the lower mountains and hills of Northern Greece and is obviously regularly visited by hoverflies (here 3 % of observations with 6 hoverfly species). Thus in spring *Crataegus monogyna* is the most attractive bush for hoverflies, in dry open lowland habitats Euphorbiaceae play an important role, while in mesic and humid habitats Apiaceae and Ranunculaceae are attractive to hoverflies.

In August 2008 the total number of flower visits observed was much higher with 3434 observations. Flower visits were recorded on 49 plant species from 76 hoverfly species (Tab. 7). During this time of the year in the siliceous mountain ranges in Northern Greece (Rhodope mountains) there is still enough water for a full development and flowering of diverse tall herb communities along forest margins and brooks as well as tall herbs in the meadows. In the calcareous mountain ranges however most of the vegetation is completely dry already and only shady places or small flushes with *Mentha longifolia* in flower attract hoverflies.

On *Pastinaca sativa* (Apiaceae) 28 % of all observations were made ( $n = 967$ ) by 27 hoverfly species, followed by *Sambucus ebulus* (Caprifoliaceae) with 21 % of flower visits ( $n = 729$ ) by 24 hoverfly species, *Mentha longifolia* (Lamiaceae) with 10 % of all flower visits by 10 hoverfly species and *Heracleum sphondylium* (Apiaceae, all subspecies lumped together) with

**Tab. 2:** Flower-visiting of *Callicera aurata* (Rossi) in the Rhodope mountains at Elatia (all observations between 05 August and 03 September).

Phenology	number	percentage
<b>Flower-visiting</b>		
<i>Verbascum densiflorum</i>	15	36,6
<i>Verbascum speciosum megaphlomos</i>	25	61,0
<i>Hypericum maculatum</i>	1	2,4
<b>Sex ratio in flower-visiting</b>		
females	16	84,2
males	3	15,8
sex not observed	22	–

7 % of flower visits ( $n = 232$ ) by 19 hoverfly species. These four plants together had 2/3 of all flower visits observed in August 2008. With lower percentages but still regular flower visits plants like *Knautia midzorensis* (Dipsacaceae), *Origanum vulgare* (Lamiaceae) and *Verbascum* species (Scrophulariaceae) followed. High numbers of hoverfly species occurred besides the above mentioned “four favourites” on *Verbascum speciosum* (Scrophulariaceae, 16 hoverfly species), *Verbascum densiflorum* (13 species), *Euphorbia seguierana niciciana* (Euphorbiaceae, 11 species) and *Cichorium intybus* (Asteraceae, 10 species). While some hoverflies used a wide spectrum of different plants as for example *Eristalis tenax* with 33 plant species or *Syrirta pipiens* and *Sphaerophoria scripta*, other hoverfly



4 5

**Fig. 4:** Female of *Callicera aurata* (Rossi) visiting the flower of *Verbascum speciosum megaphlomos*. **Fig. 5:** Typical habitat for *Callicera aurata* (Rossi) with abundant *Verbascum speciosum megaphlomos* on a small forest enclosure – where *Callicera aurata* females visit flowers in the morning and courtship takes place.

species showed clear flower preferences and were restricted to a few flowering plants. Examples are *Chrysogaster solstitialis* almost exclusively on the two Apiaceae *Pastinaca sativa* and *Heracleum sphondylium* or *Cheilosia soror* visiting only white-flowering Apiaceae. Remarkable was the abundance of *Callicera aurata* and the flower-visiting behaviour of this spectacular hoverfly (Tab. 2; Figs 4, 5):



**Fig. 6:** *Chalcosyrphus pannonicus* (OLDENBERG), a new and very rare species for the Greek Rhodope mountains.

All flower visits of *Callicera aurata* were made between 9.00 and 11.05 a. m., corresponding well with the main anthesis of *Verbascum*. No more observations were made later in the day.

All visits were recorded on yellow flowers, with an observed height preference distinctly above one meter. Only

one flower visit was observed almost on the ground on a slope around several *Verbascum* plants on *Hypericum maculatum*, which was abundant and in full flower as well.

While females (84 % of flower visits observed) were visiting flowers, males were flying around flowering plants in search for females, sometimes attacking females in flight but more often jumping on feeding females on flowers for mating. Mating started on flowers but usually the pair flew off quickly.

Also noteworthy is the very rare *Chalcosyrphus pannonicus* (Fig. 6), where the first flower visit ever recorded was by a female on *Verbascum densiflorum* at locality no. 7200, a timber-collecting place near the forest camp at Elatia with margins overgrown by tall herb communities close to the *Picea abies* forest. The only other two records of this species were a male in Malaise trap no. 6988, also at a tall herb community along a small brook at 1550 m a. s. l. surrounded by *Picea abies* forest close to the forest camp and a female in trap no. 6987, the trap near the forest margin of the transition mire in Elatia, both in the same emptying period of 27.07.2007.

Summing up, flower visits observed in autumn 2008, Apiaceae (*Heracleum sphondylium* and *Pastinaca sativa*), Asteraceae, Lamiaceae, Caprifoliaceae with *Sambucus ebulus* with their compact inflorescences were most attractive for hoverflies, together with the large yellow flowers of *Verbascum* species (Scrophulariaceae) especially in forest glades of the higher mountains of the Rhodopes.

#### 4 Discussion

The new data from Northern Greece include the first faunistic data of the higher mountain ranges of the Greek Rhodopes and additional data from Falakron and Pangeon mountains as well as some lowland observations. With 182 species recorded and 48 new to the Greek fauna (now 359 species, including recent additions by DE COURCY WILLIAMS et al. 2012) this is certainly a considerable contribution to the Greek fauna and a major addition to the Greek checklist in StN 2010 (SPEIGHT et al. 2010). As only five Malaise traps were used during one year only (in 2007), the regional fauna of Northern Greece and the Rhodope mountains is certainly still incomplete and more species can be expected with new work carried out in the region. Among the highlights are the rare *Chalcosyrphus pannonicus* (OLDENBERG, 1916), new to the Greek fauna and previously thought to be extinct, and quite healthy populations of *Callicera aurata* (ROSSI, 1790) in the high mountain grasslands and clearings or forest edges, and three still undescribed species, including a new *Eupeodes* species, which will be described by Libor MAZANEK (Oloumuc, Czech Republic).

As the Rhodope mountains are the only greek mountain range with *Picea* forests it is not surprising to find many species living here, which have not been recorded elsewhere in Greece. However the area was devastated during the wars and most of the oldest trees are only about 50–60 years old. There is still a relatively well developed dead wood fauna, and forests are largely closed on the Greek side in contrast to the Bulgarian side. This saproxylic fauna may be a result of wood-cutting in summer, while the trees are in full sap-flow and wounds from harvesting tend to develop quickly into holes and sap flows suitable for hoverfly larvae. The transition mire to be found in Elatia is one of four small transition or spring mires all situated in the Elatia forest (PAPAZISIMOU et al. 2002). These are the only mires with these characteristics existing in Greece, i. e. with peat, a free flowing spring, flush and abundant humid tall herb vegetation. The rich habitat mosaic may be one important factor for a hoverfly fauna with now 171 species for the Greek Rhodope mountains, while the complete fauna of the Rhodopes may be expected to be around 200 species.

A short excursion to the Rhodope mountains on the other side of the border in Bulgaria was made in 2010 to check differences in habitats and species combination, but no more intensive collecting has been carried out so far. Listings of Syrphidae (BECHOVSKI 2004, 2006; MARKOVA 2006) from the recent Bulgarian monographic works on the Rhodope mountains record 89 species from the Bulgarian Rhodopes. However these data include some old, so far unchecked material from literature. Our own material from the Bulgarian Rhodopes will be published soon (SSYMANK & SMIT 2013).

For northern Greece two other projects are running and will almost certainly give a number of additional results and again enlarge the Greek hoverfly checklist and then northern Greece will be much better represented:

- Michael DE COURCY WILLIAMS is collecting hoverflies mostly on the lower slopes of the Greek part of the Rhodopes in Thrace, but with some records from higher up, in the East Macedonian part and has recently published interesting results (DE COURCY WILLIAMS et al. 2012). There is a small overlap with the current work, as DE COURCY WILLIAMS also reported 20 species from the Western Rhodopes from Elatia, Stavronema and Frackto forests.
- West of our main observation localities, the Lake Kerkini Project for documenting the biodiversity of the lake and its surroundings has been running since 2002, including also Malaise-traps (<http://www.ramel.org/lake-kerkini/project.html>). The total animal biodiversity on the web page of this project lists 2066 species, however hoverflies are not yet published or available (Gordon RAMEL, pers. comm. on 27 August 2011).

Furthermore from the Rhodope mountains another three Malaise-traps were run in 2008, where the material has not yet been determined and will probably yield additional species for the high mountains. While hoping that these studies filled a major gap of knowledge on the hoverflies of northern Greece and especially the regional fauna of the Greek Rhodope mountains, there remains still a lot to do to fully understand the regional fauna of the whole large mountain range of the Rhodope mountains. Additional species from southern Greece are still regularly found especially in the project on the Aegean islands, mainly on the diversification and phylogeny of *Merodon* (RADENKOVIC et al. 2011, STÄHLS et al. 2011) and the Greek checklist will gradually give a more realistic picture of the Greek hoverfly fauna.

## 5 Περίληψη (Summary in Greek)

Κατά τα έτη 2007 και 2008 έχουν γίνει έρευνες στα Syrphidae (Diptera) στην βόρεια Ελλάδα με ιδιαίτερη βαρύτητα στα ψηλά βουνά της οροσειράς της Ροδόπης περιλαμβάνοντας μερικές θέσεις παρακολούθησης στο βουνό Φαλακρό, στην ορεινή περιοχή του Παγγαίου και στις παράκτιες πεδιάδες.

Σε συλλογές πεδίου τον Απρίλιο 2007 και τον Αύγουστο 2008, λαμβάνοντας υπόψη τα αποτελέσματα πέντε παγίδων Malaise, που λειτούργησαν το 2007, καταγράφηκαν 6800 δείγματα με 182 είδη Syrphidae. Από αυτά τα 48 είδη καταγράφονται για πρώτη φορά στην ελληνική πανίδα. Σχεδόν 3900 επισκέψεις ανθών παρατηρήθηκαν στο πεδίο. Η ελληνική πανίδα των Syrphidae και ιδιαίτερα η πανίδα τους στα βουνά της οροσειράς της Ροδόπης συμπεριλαμβάνοντας την περιοχή της «Πράσινης Ζώνης» (Green Belt) στη Βουλγαρία συζητείται εν συντομία.

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### Appendix (table 3–7)

#### Remarks to table 7 (part 1a–2c)

The following species have been observed only once while visiting flowers and are omitted from the table: *Ceriana conopsoides* on *Foeniculum vulgare*, *Cheilosia canicularis* on *Crepis biennis*, *Cheilosia pagana* on *Parnassia palustris*, *Cheilosia proxima* on *Daucus carota*, *Cheilosia variabilis* and *Cheilosia vulpina* each on *Pastinaca sativa*, *Chalcosyrphus pannonicus* on *Verbascum densiflorum*, *Criorhina berberina* on *Pastinaca sativa*, *Chrysotoxum elegans* on *Heracleum sphondylium*, *Chrysotoxum verralli* on *Peucedanum aegopodioides*, *Dasyrphus friuliensis* on *Sambucus ebulus*, *Didea alneti* on *Potentilla erecta*, *Eumerus amoenus* on *Cichorium intybus*, *Melangyna* spec. on *Pastinaca sativa*, *Milesia crabroniformis* on *Sambucus ebulus*, *Heringia (Neocnemodon)* spec. on *Verbascum densiflorum*, *Paragus pecchiolii* and *Paragus haemorrhous* on *Euphorbia seguierana niciciana*, *Paragus romanicus* on *Helianthemum nummularium*, *Paragus tibialis* on *Peucedanum aegopodioides*, *Scaeva pyrastris* var. *unicolor* on *Pastinaca hirsuta*, *Sericomyia silentis* on *Knautia midzorensis*, *Spilomyia saltuum* on *Sambucus ebulus* and *Syrphus ribesii* on *Euphorbia seguierana niciciana*. Species numbers and sum in the table include the above-listed flower visits.

**Tab. 3:** Results of field sampling of Syrphidae in north-eastern Greece in 2007 (part 1a).

Syrphidae	Locality no. det. / vid. New to Greece													
		6806	6807	6808	6809	6810	6811	6812	6813	6814	6815	6816	6817	6818
<i>Baccha elongata</i> (FABRICIUS, 1775)													1	
<i>Brachypalpoides lentus</i> (MEIGEN, 1822)														1
<i>Chalcosyrphus nemorum</i> (FABRICIUS, 1805)														
<i>Chrysotoxum cautum</i> (HARRIS, [1776])														
<i>Chrysotoxum vernale</i> LOEW, 1841			1							18		46	5	1
<i>Criorhina floccosa</i> (MEIGEN, 1822)														6
<i>Criorhina pachymera</i> (EGGER, 1858)														8
<i>Epistrophe eligans</i> (HARRIS, [1780])														1
<i>Episyrphus balteatus</i> (DEGEER, 1776)			12	2	13	10		2	2	3	4		7	1
<i>Eristalinus sepulchralis</i> (LINNAEUS, 1758)														
<i>Eristalinus taeniops</i> (WIEDEMANN, 1818)														
<i>Eristalis arbustorum</i> (LINNAEUS, 1758)			1	1	1	1			1	4		5	1	1
<i>Eristalis interrupta</i> (PODA, 1761)					3	3								
<i>Eristalis similis</i> (FALLÉN, 1817)														
<i>Eristalis tenax</i> (LINNAEUS, 1758)			3		2	2			1		2	3	16	
<i>Eumerus amoenus</i> LOEW, 1848												8		
<i>Eumerus pusillus</i> LOEW, 1848												1		
<i>Eupeodes lapponicus</i> (ZETTERSTEDT, 1838)														
<i>Eupeodes corollae</i> (FABRICIUS, 1794)			10		2	20	1		1		1			
<i>Eupeodes lucasi</i> MARCOS GARCIA, 1983	LM													
<i>Eupeodes luniger</i> (MEIGEN, 1822)									1					
<i>Eurimyia lineatus</i> FABRICIUS, 1787	*													
<i>Helophilus affinis</i> WAHLBERG, 1844	*													
<i>Helophilus pendulus</i> (LINNAEUS, 1758)	*													
<i>Helophilus trivittatus</i> (FABRICIUS, 1805)			1	1					1					
<i>Heringia heringi</i> (ZETTERSTEDT, 1843)												2		
<i>Heringia senilis</i> SACK, 1938	*											1		
<i>Heringia spec.</i>			2											

Tab. 3: Results of field sampling of Syrphidae in north-eastern Greece in 2007 (part 1b).

Syrphidae	Locality no.															sum of specimens	number of localities		
	6819	6820	6821	6822	6823	6824	6825	6826	6827	6828	6829	6830	6831	6832	6833			6834	6990
<i>Baccha elongata</i>																		1	1
<i>Brachypalpoidea lentus</i>								2										3	2
<i>Chalcosyrphus nemorum</i>								3										3	1
<i>Chrysotoxum cautum</i>																1		1	1
<i>Chrysotoxum vernale</i>	1					3		1			1					11		88	10
<i>Criorhina floccosa</i>								4										10	2
<i>Criorhina pachymera</i>								14										22	2
<i>Epistrophe eligans</i>			1	1				1				1						5	5
<i>Episyrphus balteatus</i>	1	12	6	3			2	2	2	3		2	1	1	2	1	94	23	
<i>Eristalinus sepulchralis</i>											9							9	1
<i>Eristalinus taeniops</i>									1									1	1
<i>Eristalis arbustorum</i>							2	5			2				2	8		35	14
<i>Eristalis interrupta</i>								1										7	3
<i>Eristalis similis</i>								1										1	1
<i>Eristalis tenax</i>			3			2	1	22	2	3	1			2	1			66	16
<i>Eumerus amoenus</i>			1															9	2
<i>Eumerus pusillus</i>																		1	1
<i>Eupeodes lapponicus</i>																1		1	1
<i>Eupeodes corollae</i>		1			2						8							46	9
<i>Eupeodes lucasi</i>				1														1	1
<i>Eupeodes luniger</i>			2															3	2
<i>Eurimyia lineatus</i>								1										1	1
<i>Helophilus affinis</i>											1							1	1
<i>Helophilus pendulus</i>									2		3							5	2
<i>Helophilus trivittatus</i>								1	1		8							13	6
<i>Heringia heringi</i>				2														4	2
<i>Heringia senilis</i>																		1	1
<i>Heringia spec.</i>																		2	1

**Tab. 3:** Results of field sampling of Syrphidae in north-eastern Greece in 2007 (part 2a).

Syrphidae	Locality no. det. / vid. New to Greece	6806	6807	6808	6809	6810	6811	6812	6813	6814	6815	6816	6817	6818
		<i>Lejogaster tarsata</i> (MEGERLE in MEIGEN, 1822)	*				13							
<i>Melanostoma mellinum</i> (LINNAEUS, 1758)		2		11			1		2					
<i>Melanostoma scalare</i> (FABRICIUS, 1794)					5							2		
<i>Meliscaeva auricollis</i> var. <i>maculicornis</i> ZETTERSTEDT, 1822													6	
<i>Merodon chalybeus</i> WIEDEMANN in MEIGEN, 1822	AV													
<i>Merodon clavipes</i> (FABRICIUS, 1781)	AV											1		
<i>Merodon loewi</i> VAN DER GOOT, 1964	AV							1						
<i>Merodon spinipes fulcratus</i> PARAMONOV	AV *													
<i>Myathropa florea</i> (LINNAEUS, 1758)										30		7	23	
<i>Pandasyophthalmus</i> spec. ♀♀								3						
<i>Paragus bicolor</i> (FABRICIUS, 1794)							3	1						
<i>Paragus haemorrhous</i> MEIGEN, 1822		2										1		
<i>Paragus</i> spec. ♀♀		1						1	1					
<i>Platycheirus scutatus</i> (MEIGEN, 1822)									1					
<i>Psilota atra</i> (FALLÉN, 1817)														
<i>Scaeva albomaculata</i> (MACQUART, 1842)														
<i>Scaeva pyrastris</i> (LINNAEUS, 1758)												1		
<i>Scaeva selenitica</i> (MEIGEN, 1822)														
<i>Sphaerophoria rueppellii</i> (WIEDEMANN, 1830)					3									
<i>Sphaerophoria scripta</i> (LINNAEUS, 1758)		6	37	2	42	16	2	5	3	7			2	
<i>Syritta pipiens</i> (LINNAEUS, 1758)		1	4	3			1	20		3	3	3	4	
<i>Syrphus ribesii</i> (LINNAEUS, 1758)														
<i>Xanthogramma pedissequum</i> (HARRIS, [1776])														
<i>Xylota segnis</i> (LINNAEUS, 1758)												2		
<b>sum of specimens</b>		<b>23</b>	<b>61</b>	<b>8</b>	<b>95</b>	<b>52</b>	<b>8</b>	<b>34</b>	<b>13</b>	<b>65</b>	<b>36</b>	<b>66</b>	<b>72</b>	<b>3</b>
<b>number of species</b>		<b>6</b>	<b>9</b>	<b>4</b>	<b>10</b>	<b>6</b>	<b>5</b>	<b>7</b>	<b>9</b>	<b>6</b>	<b>15</b>	<b>6</b>	<b>10</b>	<b>3</b>

Tab. 3: Results of field sampling of Syrphidae in north-eastern Greece in 2007 (part 2b).

Syrphidae	Locality no.															sum of specimens	number of localities			
		6819	6820	6821	6822	6823	6824	6825	6826	6827	6828	6829	6830	6831	6832			6833	6834	6990
<i>Lejogaster tarsata</i>								1										14	2	
<i>Melanostoma mellinum</i>								1		2								19	6	
<i>Melanostoma scalare</i>																		7	2	
<i>Meliscaeva auricollis</i> var. <i>maculicornis</i>					3				1				1	1			1	13	6	
<i>Merodon chalybeus</i>														2				2	1	
<i>Merodon clavipes</i>			2										9					12	3	
<i>Merodon loewi</i>																		1	1	
<i>Merodon spinipes fulcratus</i>						2												2	1	
<i>Myathropa florea</i>			16	1	1			15									2	95	8	
<i>Pandasyopthalmus</i> spec. ♀♀									1								1	5	3	
<i>Paragus bicolor</i>																		4	2	
<i>Paragus haemorrhous</i>																		3	2	
<i>Paragus</i> spec. ♀♀																		3	3	
<i>Platycheirus scutatus</i>																		1	1	
<i>Psilota atra</i>		3																3	1	
<i>Scaeva albomaculata</i>					1													1	1	
<i>Scaeva pyrastris</i>								1		2								4	3	
<i>Scaeva selenitica</i>																	1	1	1	
<i>Sphaerophoria rueppellii</i>																		3	1	
<i>Sphaerophoria scripta</i>						1	3	2		5	6		1	6	5	7	7	165	20	
<i>Syritta pipiens</i>		1						2	2			3	1		2			53	15	
<i>Syrphus ribesii</i>													1					1	1	
<i>Xanthogramma pedissequum</i>				5														5	1	
<i>Xylota segnis</i>																		2	1	
<b>sum of specimens</b>		<b>3</b>	<b>4</b>	<b>42</b>	<b>15</b>	<b>9</b>	<b>8</b>	<b>13</b>	<b>78</b>	<b>11</b>	<b>16</b>	<b>36</b>	<b>6</b>	<b>17</b>	<b>13</b>	<b>12</b>	<b>31</b>	<b>3</b>	<b>853</b>	–
<b>number of species</b>		<b>3</b>	<b>2</b>	<b>8</b>	<b>7</b>	<b>5</b>	<b>3</b>	<b>9</b>	<b>17</b>	<b>5</b>	<b>5</b>	<b>9</b>	<b>5</b>	<b>4</b>	<b>6</b>	<b>4</b>	<b>7</b>	<b>3</b>	<b>49</b>	–

**Tab. 4:** Results of field sampling of Syrphidae in north-eastern Greece in 2008 (part 1a). Abbreviations: T = Lowlands, Nestos and coastal region; R = Rhodope mountain range.

Mountain range		T	T	T	T	R	R	T	R	R	R	R	R	R	R	R	R
Syrphidae	locality no. det. / vid. New to Greece	7185	7186	7187	7188	7189	7190	7191	7192	7192A	7192B	7193	7194	7195	7195A	7196	7197
<i>Arctophila bombiformis</i> (FALLÉN, 1810)												3	2				
<i>Baccha obscuripennis</i> MEIGEN, 1822												1					
<i>Callicera aurata</i> (ROSSI, 1790)											8		16	2			
<i>Ceriana conopsoides</i> (LINNAEUS, 1758)																	
<i>Ceriana vespiformis</i> (LATREILLE, 1804)					4												
<i>Chalcosyrphus pannonicus</i> (OLDENBERG, 1916)	*																
<i>Chalcosyrphus piger</i> (FABRICIUS, 1794)	*																
<i>Cheilosia aerea</i> DUFOUR, 1848													1			1	
<i>Cheilosia canicularis</i> (PANZER, 1801)											1						
<i>Cheilosia illustrata</i> (HARRIS, 1780)																	
<i>Cheilosia longula</i> (ZETTERSTEDT, 1838)	*																2
<i>Cheilosia pagana</i> (MEIGEN, 1822)	*																
<i>Cheilosia proxima</i> (ZETTERSTEDT, 1843)																	
<i>Cheilosia soror</i> ZETTERSTEDT, 1843					1												
<i>Cheilosia variabilis</i> (PANZER, [1798])																	1
<i>Cheilosia vulpina</i> (MEIGEN, 1822)																	
<i>Chrysogaster basalis</i> LOEW, 1857													1				1
<i>Chrysogaster solstitialis</i> (FALLÉN, 1817)											5						5
<i>Chrysotoxum bicinctum</i> (LINNAEUS, 1758)									1	4			1	1			3
<i>Chrysotoxum elegans</i> LOEW, 1841																	
<i>Chrysotoxum fasciolatum</i> (DEGEER, 1776)	*													2			
<i>Chrysotoxum festivum</i> LINNAEUS, 1758											3		1				3
<i>Chrysotoxum verralli</i> (COLLIN, 1940)	*																
<i>Criorhina berberina</i> (FABRICIUS, 1805)																	
<i>Dasyrphus friuliensis</i> (VAN DER GOOT, 1960)									1								
<i>Didea alneti</i> (FALLÉN, 1817)																	
<i>Episyrphus balteatus</i> (DEGEER, 1776)								1	4			2					2
<i>Eristalinus aeneus</i> (SCOPOLI, 1763)								3									
<i>Eristalinus sepulchralis</i> (LINNAEUS, 1758)																	
<i>Eristalinus taeniops</i> (WIEDEMANN, 1818)							2										
<i>Eristalis arbustorum</i> (LINNAEUS, 1758)				1		200					2	12				49	1
<i>Eristalis interrupta</i> (PODA, 1761)									40		80						

**Tab. 4:** Results of field sampling of Syrphidae in north-eastern Greece in 2008 (part 1b). Abbreviations: T = Lowlands, Nestos and coastal region; R = Rhodope mountain range; F = Falakron mountains.

Mountain range	R	R	R	T	R	R	R	F	F	F	F	F	F	F	F	F	F	F	
Syrphidae	locality no.	7198	7199	7200	7201	7202	7203	7204	7205	7205A	7205B	7206	7207	7208	7209	7210	7211	7212	7213
<i>Arctophila bombiformis</i>								3											
<i>Baccha obscuripennis</i>																			
<i>Callicera aurata</i>				35															
<i>Ceriana conopsoides</i>																			
<i>Ceriana vespiformis</i>																			
<i>Chalcosyrphus pannonicus</i>				1															
<i>Chalcosyrphus piger</i>				2				1											
<i>Cheilosia aerea</i>										1									
<i>Cheilosia canicularis</i>																			
<i>Cheilosia illustrata</i>								4											
<i>Cheilosia longula</i>							1												
<i>Cheilosia pagana</i>		1																	
<i>Cheilosia proxima</i>										1									
<i>Cheilosia soror</i>										2		1						12	
<i>Cheilosia variabilis</i>																			
<i>Cheilosia vulpina</i>				1															
<i>Chrysogaster basalis</i>									1										
<i>Chrysogaster solstitialis</i>		1	1					7											
<i>Chrysotoxum bicinctum</i>																			
<i>Chrysotoxum elegans</i>								1											
<i>Chrysotoxum fasciolatum</i>																			
<i>Chrysotoxum festivum</i>				1															
<i>Chrysotoxum verralli</i>																			
<i>Criorhina berberina</i>																			
<i>Dasysyrphus friuliensis</i>																			
<i>Didea alneti</i>		1																	
<i>Episyrphus balteatus</i>					12				1	2									
<i>Eristalinus aeneus</i>																			
<i>Eristalinus sepulchralis</i>																			
<i>Eristalinus taeniops</i>																		10	
<i>Eristalis arbustorum</i>		1	11		9	2			1					1	1	70			1
<i>Eristalis interrupta</i>		4	188		1		14												

**Tab. 4:** Results of field sampling of Syrphidae in north-eastern Greece in 2008 (part 1c). Abbreviations: T = Lowlands, Nestos and coastal region; F = Falakron mountains; P = Pangeon mountains.

Mountain range	F	T	F	P	P	P	P	T	T	Sum				sum of specimens	number of localities		
Syrphidae	locality no.	7214	7215	7216	7217	7218	7219	7220	7221	7222	7223	Rhodope	Falakron			Pangeon Lowlands & coast	coast
<i>Arctophila bombiformis</i>												8	0	0	0	8	3
<i>Baccha obscuripennis</i>												1	0	0	0	1	1
<i>Callicera aurata</i>												61	0	0	0	61	4
<i>Ceriana conopsoides</i>									1			0	0	0	1	1	1
<i>Ceriana vespiformis</i>												0	0	0	4	4	1
<i>Chalcosyrphus pannonicus</i>												1	0	0	0	1	1
<i>Chalcosyrphus piger</i>												3	0	0	0	3	2
<i>Cheilosia aerea</i>												2	1	0	0	3	3
<i>Cheilosia canicularis</i>												1	0	0	0	1	1
<i>Cheilosia illustrata</i>												4	0	0	0	4	1
<i>Cheilosia longula</i>												3	0	0	0	3	2
<i>Cheilosia pagana</i>												1	0	0	0	1	1
<i>Cheilosia proxima</i>												0	1	0	0	1	1
<i>Cheilosia soror</i>												0	15	0	1	16	4
<i>Cheilosia variabilis</i>												1	0	0	0	1	1
<i>Cheilosia vulpina</i>												1	0	0	0	1	1
<i>Chrysogaster basalis</i>												3	0	0	0	3	3
<i>Chrysogaster solstitialis</i>												19	0	0	0	19	5
<i>Chrysotoxum bicinctum</i>												10	0	0	0	10	5
<i>Chrysotoxum elegans</i>												1	0	0	0	1	1
<i>Chrysotoxum fasciolatum</i>												2	0	0	0	2	1
<i>Chrysotoxum festivum</i>												8	0	0	0	8	4
<i>Chrysotoxum verralli</i>									1			0	0	0	1	1	1
<i>Criorhina berberina</i>												1	0	0	0	1	1
<i>Dasysyrphus friuliensis</i>												1	0	0	0	1	1
<i>Didea alneti</i>												1	0	0	0	1	1
<i>Episyrphus balteatus</i>				1	4	2	1		1		5	8	4	8	18	38	13
<i>Eristalinus aeneus</i>												0	0	0	3	3	1
<i>Eristalinus sepulchralis</i>			2									0	0	0	2	2	1
<i>Eristalinus taeniops</i>												2	10	0	0	12	2
<i>Eristalis arbustorum</i>		1	9	2				2	1			287	77	3	10	377	20
<i>Eristalis interrupta</i>												327	0	0	0	327	6



**Tab. 4:** Results of field sampling of Syrphidae in north-eastern Greece in 2008 (part 2a). Abbreviations: T = Lowlands, Nestos and coastal region; R = Rhodope mountain range.

Mountain range		T	T	T	T	R	R	T	R	R	R	R	R	R	R	R
Syrphidae	locality no.	det. / vid.	New to Greece													
			7185	7186	7187	7188	7189	7190	7191	7192	7192A	7192B	7193	7194	7195	7195A
<i>Eristalis jugorum</i> (EGGER, 1858)																4
<i>Eristalis pertinax</i> (SCOPOLI, 1763)									35	8	18	2				
<i>Eristalis similis</i> (FALLÉN, 1817)						2				200	5					6
<i>Eristalis tenax</i> (LINNAEUS, 1758)			1	5	2	1	6	2	290	123	18	93	6	4		440
<i>Eumerus amoenus</i> LOEW, 1848																
<i>Eumerus barbarus</i> (COQUEBERT, 1804)		*			4											
<i>Eumerus lucidus</i> LOEW, 1848	DD															
<i>Eumerus spec.</i> ♀♀								8								
<i>Eupeodes corollae</i> (FABRICIUS, 1794)						1			1		1					
<i>Eupeodes lucasi</i> MARCOS GARCIA, 1983	LM												1			
<i>Eupeodes luniger</i> (MEIGEN, 1822)											1		1	4		
<i>Fagisyrphus cinctus</i> (FALLÉN, 1817)																
<i>Helophilus pendulus</i> (LINNAEUS, 1758)		*														1
<i>Heringia (Neocnemodon) spec.</i> ♀♀																
<i>Heringia heringi</i> (ZETTERSTEDT, 1843)																
<i>Melangyna compositarum</i> (VERRALL, 1873)		*														1
<i>Melangyna spec.</i>																1
<i>Melanostoma mellinum</i> (LINNAEUS, 1758)																
<i>Melanostoma scalare</i> (FABRICIUS, 1794)																
<i>Meliscaeva auricollis</i> (MEIGEN, 1822)													1		1	
<i>Merodon avidus</i> (ROSSI, 1790)	AV						3	2							1	
<i>Merodon chalybeatus</i> SACK, 1913	AV															
<i>Merodon cinereus</i> (FABRICIUS, 1794)	AV												14		1	
<i>Merodon italicus</i> RONDANI, 1845	AV *								8							
<i>Merodon rufus</i> MEIGEN, 1838	AV *															
<i>Milesia crabroniformis</i> (FABRICIUS, 1775)										1						
<i>Milesia semiluctifera</i> (VILLERS, 1789)					1	2										
<i>Myathropa florea</i> (LINNAEUS, 1758)				3	4	1	3		5	2	4		3			24
<i>Pandasyophthalmus</i> STUCKENBERG, 1954 ♀♀																
<i>Paragus albifrons</i> (FALLÉN, 1817)																
<i>Paragus haemorrhous</i> MEIGEN, 1822																
<i>Paragus pecchiolii</i> RONDANI, 1857																

**Tab. 4:** Results of field sampling of Syrphidae in north-eastern Greece in 2008 (part 2b). Abbreviations: T = Lowlands, Nestos and coastal region; R = Rhodope mountain range; F = Falakron mountains.

Mountain range	R	R	R	R	T	R	R	R	F	F	F	F	F	F	F	F	F	F	F	
Syrphidae	locality no.	7197	7198	7199	7200	7201	7202	7203	7204	7205	7205A	7205B	7206	7207	7208	7209	7210	7211	7212	7213
<i>Eristalis jugorum</i>			2		1															
<i>Eristalis pertinax</i>		1	1	3	18			1	3											
<i>Eristalis similis</i>		26	7	2	8			46	80					2	1	1				
<i>Eristalis tenax</i>		36	40	22	87	8	3	27	100	1	5		1	18	45	142	81	27	9	1
<i>Eumerus amoenus</i>																				
<i>Eumerus barbarus</i>																				
<i>Eumerus lucidus</i>												1								
<i>Eumerus spec.</i> ♀♀																				
<i>Eupeodes corollae</i>		1	1	1										1	3			1	1	
<i>Eupeodes lucasi</i>																				
<i>Eupeodes luniger</i>					2															
<i>Fagisyrphus cinctus</i>			1																	
<i>Helophilus pendulus</i>																				
<i>Heringia (Neocnemodon) spec.</i> ♀♀					1															
<i>Heringia heringi</i>						1														
<i>Melangyna compositarum</i>					2															
<i>Melangyna spec.</i>																				
<i>Melanostoma mellinum</i>				1		2					3						1			
<i>Melanostoma scalare</i>		1																		
<i>Meliscaeva auricollis</i>		2																		
<i>Merodon avidus</i>						6	2				41								1	
<i>Merodon chalybeatus</i>											9			1			2			1
<i>Merodon cinereus</i>					1															
<i>Merodon italicus</i>																				
<i>Merodon rufus</i>																			1	
<i>Milesia crabroniformis</i>																				
<i>Milesia semiluctifera</i>																				
<i>Myathropa florea</i>		2	1		16	1			14					3						
<i>Pandasyophthalmus spec.</i> ♀♀											1								1	
<i>Paragus albifrons</i>													1							
<i>Paragus haemorrhous</i>						1							1							1
<i>Paragus pecchiolii</i>																				

**Tab. 4:** Results of field sampling of Syrphidae in north-eastern Greece in 2008 (part 2c). Abbreviations: T = Lowlands, Nestos and coastal region; F = Falakron mountains; P = Pangeon mountains.

Mountain range	F	T	F	P	P	P	P	P	T	T	Sum				sum of specimens	number of localities	
Syrphidae	locality no.	7214	7215	7216	7217	7218	7219	7220	7221	7222	7223	Rhodope	Falakron	Pangeon Lowlands & coast			sum of specimens
<i>Eristalis jugorum</i>												7	0	0	0	7	3
<i>Eristalis pertinax</i>												90	0	0	0	90	10
<i>Eristalis similis</i>					1							382	4	1	0	387	14
<i>Eristalis tenax</i>			1	2	5	3	70	12	6			1296	332	96	19	1743	38
<i>Eumerus amoenus</i>									1			0	0	1	0	1	1
<i>Eumerus barbarus</i>												0	0	0	4	4	1
<i>Eumerus lucidus</i>												0	1	0	0	1	1
<i>Eumerus spec.</i> ♀♀												0	0	0	8	8	1
<i>Eupeodes corollae</i>			1									6	6	0	1	13	11
<i>Eupeodes lucasi</i>												1	0	0	0	1	1
<i>Eupeodes luniger</i>									1			8	0	1	0	9	5
<i>Fagisyrphus cinctus</i>						1						1	0	1	0	2	2
<i>Helophilus pendulus</i>												1	0	0	0	1	1
<i>Heringia (Neocnemodon) spec.</i> ♀♀												1	0	0	0	1	1
<i>Heringia heringi</i>												0	0	0	1	1	1
<i>Melangyna compositarum</i>												3	0	0	0	3	2
<i>Melangyna spec.</i>												1	0	0	0	1	1
<i>Melanostoma mellinum</i>												1	4	0	2	7	4
<i>Melanostoma scalare</i>												1	0	0	0	1	1
<i>Meliscaeva auricollis</i>												4	0	0	0	4	3
<i>Merodon avidus</i>									2			6	42	2	8	58	8
<i>Merodon chalybeatus</i>												0	13	0	0	13	4
<i>Merodon cinereus</i>												16	0	0	0	16	3
<i>Merodon italicus</i>			3									0	0	0	11	11	2
<i>Merodon rufus</i>												0	1	0	0	1	1
<i>Milesia crabroniformis</i>												1	0	0	0	1	1
<i>Milesia semiluctifera</i>				3								0	3	0	3	6	3
<i>Myathropa florea</i>					4	3	1		2	8		75	3	10	16	104	20
<i>Pandasyophthalmus spec.</i> ♀♀										1		0	2	0	1	3	3
<i>Paragus albifrons</i>												0	1	0	0	1	1
<i>Paragus haemorrhous</i>		1	2				1					0	5	1	1	7	6
<i>Paragus pecchiolii</i>					2						3	0	0	2	3	5	2

**Tab. 4:** Results of field sampling of Syrphidae in north-eastern Greece in 2008 (part 3a). Abbreviations: T = Lowlands, Nestos and coastal region; R = Rhodope mountain range.

Mountain range		T	T	T	T	R	R	T	R	R	R	R	R	R	R	R	R
Syrphidae	locality no. det. / vid. New to Greece	7185	7186	7187	7188	7189	7190	7191	7192	7192A	7192B	7193	7194	7195	7195A	7196	7197
<i>Paragus romanicus</i> STANESCU, 1992	DD *																
<i>Paragus spec.</i> ♀♀				2													
<i>Paragus tibialis</i> (FALLÉN, 1817)							1										
<i>Parasyrphus vittiger</i> (ZETTERSTEDT, 1843)														4			
<i>Parhelophilus versicolor</i> (FABRICIUS, 1794)																	
<i>Platycheirus albimanus</i> (FABRICIUS, 1781)											1		2				1
<i>Platycheirus angustipes</i> GOELDIN DE TIEFENAU, 1974	*																1
<i>Scaeva pyrastris</i> (LINNAEUS, 1758)									3	1			3			1	3
<i>Scaeva pyrastris</i> var. <i>unicolor</i> CURTIS, 1834													1				
<i>Sericomyia silentis</i> (HARRIS, [1776])												1					
<i>Spazigaster ambulans</i> (FABRICIUS, 1798)	*								1								2
<i>Sphaerophoria scripta</i> (LINNAEUS, 1758)		3					3		2				9			1	2
<i>Spilomyia saltuum</i> (FABRICIUS, 1794)																	
<i>Syrirta pipiens</i> (LINNAEUS, 1758)		18	2	47	27		24		1		4		2	1		5	1
<i>Syrphus ribesii</i> (LINNAEUS, 1758)																	1
<i>Syrphus torvus</i> OSTEN-SACKEN, 1875										1	1		1	1		7	
<i>Syrphus vitripennis</i> MEIGEN, 1822									1	4	1		2	1		3	1
<i>Volucella inanis</i> (LINNAEUS, 1758)									20	3	1	6					1
<i>Volucella pellucens</i> (LINNAEUS, 1758)									45	18	6	15					1
<i>Volucella zonaria</i> (PODA, 1761)				7					1	1							
<i>Xanthogramma laetum</i> FABRICIUS, 1794	*																
<i>Xanthogramma stackelbergi</i> VIOLOVITSH, 1975				1													
<i>Xylota segnis</i> (LINNAEUS, 1758)										3	2						
<i>Xylota sylvarum</i> (LINNAEUS, 1758)																	
<b>sum of specimens</b>		<b>21</b>	<b>3</b>	<b>66</b>	<b>45</b>	<b>5</b>	<b>242</b>	<b>24</b>	<b>452</b>	<b>377</b>	<b>154</b>	<b>135</b>	<b>52</b>	<b>34</b>	<b>6</b>	<b>547</b>	<b>97</b>
<b>number of species</b>		<b>2</b>	<b>2</b>	<b>8</b>	<b>7</b>	<b>4</b>	<b>8</b>	<b>6</b>	<b>17</b>	<b>15</b>	<b>17</b>	<b>9</b>	<b>18</b>	<b>9</b>	<b>5</b>	<b>15</b>	<b>23</b>
<b>corrected number of species</b>		–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

**Tab. 4:** Results of field sampling of Syrphidae in north-eastern Greece in 2008 (part 3b). Abbreviations: T = Lowlands, Nestos and coastal region; R = Rhodope mountain range; F = Falakron mountains.

Mountain range	R	R	R	T	R	R	R	F	F	F	F	F	F	F	F	F	F	F
Syrphidae	7198	7199	7200	7201	7202	7203	7204	7205	7205A	7205B	7206	7207	7208	7209	7210	7211	7212	7213
<i>Paragus romanicus</i>											1							
<i>Paragus spec.</i> ♀♀																		
<i>Paragus tibialis</i>																	1	
<i>Parasyrphus vittiger</i>																		
<i>Parhelophilus versicolor</i>																		
<i>Platycheirus albimanus</i>	1					2												
<i>Platycheirus angustipes</i>																		
<i>Scaeva pyrastris</i>			1	1			1						1					
<i>Scaeva pyrastris var. unicolor</i>																		
<i>Sericomyia silentis</i>																		
<i>Spazigaster ambulans</i>		1																
<i>Sphaerophoria scripta</i>	1	4	1	2	2	1	2	3	7				3	2		3	1	1
<i>Spilomyia saltuum</i>																		
<i>Syritta pipiens</i>				16	18			5	12	20	11	1			16		26	15
<i>Syrphus ribesii</i>												1						
<i>Syrphus torvus</i>			4															
<i>Syrphus vitripennis</i>	2		2				3											
<i>Volucella inanis</i>							1											
<i>Volucella pellucens</i>	3					1	2											
<i>Volucella zonaria</i>				1		1												
<i>Xanthogramma laetum</i>				1														
<i>Xanthogramma stackelbergi</i>																		
<i>Xylota segnis</i>																		
<i>Xylota sylvarum</i>																		
<b>sum of specimens</b>	<b>60</b>	<b>42</b>	<b>384</b>	<b>52</b>	<b>35</b>	<b>82</b>	<b>237</b>	<b>10</b>	<b>85</b>	<b>21</b>	<b>16</b>	<b>27</b>	<b>54</b>	<b>146</b>	<b>180</b>	<b>34</b>	<b>51</b>	<b>19</b>
<b>number of species</b>	<b>11</b>	<b>12</b>	<b>21</b>	<b>12</b>	<b>6</b>	<b>9</b>	<b>16</b>	<b>4</b>	<b>12</b>	<b>2</b>	<b>6</b>	<b>7</b>	<b>6</b>	<b>4</b>	<b>6</b>	<b>6</b>	<b>7</b>	<b>5</b>
<b>corrected number of species</b>	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

**Tab. 4:** Results of field sampling of Syrphidae in north-eastern Greece in 2008 (part 3c). Abbreviations: T = Lowlands, Nestos and coastal region; F = Falakron mountains; P = Pangeon mountains.

Mountain range	F	T	F	P	P	P	P	T	T	Sum				sum of specimens	number of localities	
locality no.	7214	7215	7216	7217	7218	7219	7220	7221	7222	7223	Rhodope	Falakron	Pangeon			Lowlands & coast
<i>Paragus romanicus</i>											0	1	0	0	1	1
<i>Paragus spec.</i> ♀♀			1								0	1	0	2	3	2
<i>Paragus tibialis</i>											1	1	0	0	2	2
<i>Parasyrphus vittiger</i>											4	0	0	0	4	1
<i>Parhelophilus versicolor</i>									1		0	0	0	1	1	1
<i>Platycheirus albimanus</i>											7	0	0	0	7	5
<i>Platycheirus angustipes</i>											1	0	0	0	1	1
<i>Scaeva pyrastris</i>											13	1	0	1	15	9
<i>Scaeva pyrastris var. unicolor</i>											1	0	0	0	1	1
<i>Sericomyia silentis</i>											1	0	0	0	1	1
<i>Spazigaster ambulans</i>											4	0	0	0	4	3
<i>Sphaerophoria scripta</i>			3	1	2	2		3			28	23	8	5	64	25
<i>Spilomyia saltuum</i>				1							0	0	1	0	1	1
<i>Syrpita pipiens</i>	57	3	36			4	70	16	25		56	199	90	138	483	28
<i>Syrphus ribesii</i>											1	1	0	0	2	2
<i>Syrphus torvus</i>											15	0	0	0	15	6
<i>Syrphus vitripennis</i>				2		1					20	0	3	0	23	12
<i>Volucella inanis</i>				1	1						32	0	2	0	34	8
<i>Volucella pellucens</i>				1	2						91	0	3	0	94	10
<i>Volucella zonaria</i>				1	2		1				3	0	4	8	15	8
<i>Xanthogramma laetum</i>											0	0	0	1	1	1
<i>Xanthogramma stackelbergi</i>				1							0	0	1	1	2	2
<i>Xylota segnis</i>				9	4	1					5	0	14	0	19	5
<i>Xylota sylvarum</i>				3	2						0	0	5	0	5	2
<b>sum of specimens</b>	<b>59</b>	<b>19</b>	<b>50</b>	<b>36</b>	<b>22</b>	<b>81</b>	<b>85</b>	<b>33</b>	<b>1</b>	<b>44</b>	<b>2941</b>	<b>752</b>	<b>257</b>	<b>275</b>	<b>4225</b>	<b>-</b>
<b>number of species</b>	<b>3</b>	<b>6</b>	<b>8</b>	<b>14</b>	<b>10</b>	<b>8</b>	<b>4</b>	<b>9</b>	<b>1</b>	<b>7</b>	<b>61</b>	<b>26</b>	<b>21</b>	<b>29</b>	<b>-</b>	<b>89</b>
<b>corrected number of species</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>60</b>	<b>24</b>	<b>21</b>	<b>27</b>	<b>-</b>	<b>85</b>

Tab. 5: Results of the Syrphidae from Malaise traps in north-eastern Greece in 2007 (part 1).

Syrphidae	det. / vid.	New to Greece	Malaise traps with locality no.					sum of specimens	number of traps	sum Rhodope Mts.
			6985 Chrisoupolis	6986 Sideronero	6987 Elatio	6988 Elatio	6989 Elatio			
<i>Arctophila bombiformis</i> (FALLÉN, 1810)						3	3	1	3	
<i>Blera fallax</i> (LINNAEUS, 1758)	*					1	1	1	1	
<i>Brachypalpus chrysites</i> EGGER, 1859						1	1	1	1	
<i>Brachypalpus valgus</i> (PANZER, [1798])				1			1	1	1	
<i>Callicera aurata</i> (ROSSI, 1790)					1		1	1	1	
<i>Chalcosyrphus pannonicus</i> (OLDENBERG, 1916)	*			1	1		2	2	2	
<i>Chalcosyrphus piger</i> (FABRICIUS, 1794)	*				38		38	1	38	
<i>Chamaesyrphus scaevoides</i> (FALLÉN, 1817)	*			1			1	1	1	
<i>Cheilosia aerea</i> DUFOUR, 1848						2	2	1	2	
<i>Cheilosia albipila</i> MEIGEN, 1838				1	3		4	2	4	
<i>Cheilosia albitarsis</i> (MEIGEN, 1822)	CC				10		10	1	10	
<i>Cheilosia antiqua</i> (MEIGEN, 1822)					6		6	1	6	
<i>Cheilosia barbata</i> LOEW, 1857				1	16	1	18	3	18	
<i>Cheilosia bracusi</i> VUJIC & CLAUSSEN, 1994	CC			1	1		2	2	2	
<i>Cheilosia carbonaria</i> EGGER, 1860	*				1		1	1	1	
<i>Cheilosia chlorus</i> (MEIGEN, 1822)	*			1			1	1	1	
<i>Cheilosia gigantea</i> (ZETTERSTEDT, 1838)	CC *			1			1	1	1	
<i>Cheilosia illustrata</i> (HARRIS, 1780)					6		6	1	6	
<i>Cheilosia impressa</i> LOEW in SCHINER, 1857					5		5	1	5	
<i>Cheilosia longula</i> (ZETTERSTEDT, 1838)	*				1		1	1	1	
<i>Cheilosia melanura</i> BECKER, 1894					13		13	1	13	
<i>Cheilosia mutabilis</i> (FALLÉN, 1817)					1		1	1	1	
<i>Cheilosia pagana</i> (MEIGEN, 1822)	*				4		4	1	4	
<i>Cheilosia pictipennis</i> EGGER, 1860	CC *			3	1		4	2	4	
<i>Cheilosia sareptana</i> BECKER, 1894	CC *				1		1	1	1	
<i>Cheilosia scanica</i> RINGDAHL, 1937	CC			2			2	1	2	
<i>Cheilosia scutellata</i> (FALLÉN, 1817)					4		4	1	4	
<i>Cheilosia urbana</i> (MEIGEN, 1822)	CC			3	6	1	10	3	10	
<i>Cheilosia variabilis</i> (PANZER, [1798])					2		2	1	2	
<i>Cheilosia vicina</i> (ZETTERSTEDT, 1849)					3		3	1	3	
<i>Cheilosia vulpina</i> (MEIGEN, 1822)					3		3	1	3	
<i>Chrysotoxum arcuatum</i> LINNAEUS, 1758				1	3		4	2	4	
<i>Chrysotoxum bicinctum</i> (LINNAEUS, 1758)				18	11		29	2	29	
<i>Chrysotoxum elegans</i> LOEW, 1841				1	1		2	2	2	
<i>Chrysotoxum fasciolatum</i> (DEGEER, 1776)	*					1	1	1	1	
<i>Chrysotoxum festivum</i> LINNAEUS, 1758				6	5		11	2	11	
<i>Chrysotoxum intermedium</i> MEIGEN, 1822	*				1	1	2	2	2	
<i>Chrysotoxum octomaculatum</i> CURTIS, 1937					2		2	1	2	
<i>Chrysotoxum vernale</i> LOEW, 1841				1	1		2	2	2	

**Tab. 5:** Results of the Syrphidae from Malaise traps in north-eastern Greece in 2007 (part 2).

Syrphidae	det. / vid. New to Greece	Malaise traps with locality no.					sum of specimens	number of traps	sum Rhodope Mts.
		6985 Chrisoupolis	6986 Sideronero	6987 Elatio	6988 Elatio	6989 Elatio			
<i>Chrysotoxum verralli</i> (COLLIN, 1940)	*			3	1		4	2	4
<i>Criorhina berberina</i> var. <i>berberina</i> (FABRICIUS, 1822)					3		3	1	3
<i>Criorhina pachymera</i> (EGGER, 1858)	DD	1					1	1	0
<i>Dasyrphus</i> aff. <i>venustus</i> „1 <sup>st</sup> sensu DOCZKAL	DD *			4	6		10	2	10
<i>Dasyrphus albostrigatus</i> (FALLÉN, 1817)	*			1	2		3	2	3
<i>Dasyrphus hilaris</i> (ZETTERSTEDT, 1843)	DD				12		12	1	12
<i>Dasyrphus lenensis</i> BAGATSHANOVA, 1980	*				1		1	1	1
<i>Dasyrphus pauxillus</i> WILLISTON, 1887					1		1	1	1
<i>Dasyrphus pinastris</i> (DEGEER, 1776)				3	23		26	2	26
<i>Dasyrphus tricinatus</i> (FALLÉN, 1817)				2			2	1	2
<i>Dasyrphus venustus</i> (MEIGEN, 1822)				2	25		27	2	27
<i>Dasyrphus</i> spec.					1		1	1	1
<i>Didea alneti</i> (FALLÉN, 1817)					2		2	1	2
<i>Didea fasciata</i> MACQUART, 1834					2		2	1	2
<i>Didea intermedia</i> LOEW, 1854	*			1			1	1	1
<i>Epistrophe eligans</i> (HARRIS, [1780])		2	1				3	2	1
<i>Epistrophe nitidicollis</i> (MEIGEN, 1822)		8	8	2	1		19	4	11
<i>Epistrophella euchroma</i> (KOWARZ, 1885)			3				3	1	3
<i>Episyrphus balteatus</i> (DEGEER, 1776)		11	18	28	51	1	109	5	98
<i>Eristalis arbustorum</i> (LINNAEUS, 1758)				15	20		35	2	35
<i>Eristalis pertinax</i> (SCOPOLI, 1763)					6		6	1	6
<i>Eristalis similis</i> (FALLÉN, 1817)				14	53		67	2	67
<i>Eristalis tenax</i> (LINNAEUS, 1758)				41	25		66	2	66
<i>Eumerus amoenus</i> LOEW, 1848			2	1			3	2	3
<i>Eumerus argyropus</i> LOEW, 1848	DD			1	1		2	2	2
<i>Eumerus strigatus</i> (FALLÉN, 1817)			3	1			4	2	4
<i>Eumerus</i> spec.			1				1	1	1
<i>Eupeodes bucculatus</i> (RONDANI, 1857)	LM *			4	2		6	2	6
<i>Eupeodes corollae</i> (FABRICIUS, 1794)	LM	3	19	30	22	5	79	5	76
<i>Eupeodes flaviceps</i> (RONDANI, 1857)	LM			2	1		3	2	3
<i>Eupeodes lapponicus</i> (ZETTERSTEDT, 1838)				2	4		6	2	6
<i>Eupeodes latifasciatus</i> (MACQUART, 1829)	LM *			3	9		12	2	12
<i>Eupeodes lucasi</i> MARCOS GARCIA, 1983	LM			2	2	1	5	3	5
<i>Eupeodes luniger</i> (MEIGEN, 1822)	LM		20	22	10	5	57	4	57
<i>Eupeodes nielsenii</i> DUSEK & LASKA, 1976	LM *		1	1	8		10	3	10
<i>Eupeodes nitens</i> (ZETTERSTEDT, 1843)	LM			6	7	1	14	3	14
<i>Eupeodes</i> spec.			1	1		1	3	3	3
<i>Eupeodes</i> spec. 1 (alpine form of <i>nielsenii</i> )	LM *			2			2	1	2
<i>Fagisyrphus cinctus</i> (FALLÉN, 1817)					14	1	15	2	15



Tab. 5: Results of the Syrphidae from Malaise traps in north-eastern Greece in 2007 (part 3).

Syrphidae	det. / vid. New to Greece	Malaise traps with locality no.					sum of specimens	number of traps	Sum Rhodope Mts.
		6985	6986	6987	6988	6989			
		Chrisoupolis	Sidernero	Elatio	Elatio	Elatio			
<i>Ferdinandea cuprea</i> (SCOPOLI, 1763)			1	1			2	2	2
<i>Helophilus pendulus</i> (LINNAEUS, 1758)	*				1		1	1	1
<i>Heringia pubescens</i> (DELUCCHI & PSCHORN-WALCHER, 1955)	*				1		1	1	1
<i>Heringia</i> ( <i>Neocnemodon</i> ) spec. ♀♀				2	9		11	2	11
<i>Megasyrphus erraticus</i> (LINNAEUS, 1758)					1		1	1	1
<i>Melangyna labiatarum</i> (VERRALL, 1901)	*				1		1	1	1
<i>Melangyna lasiophthalma</i> (ZETTERSTEDT, 1843)					2		2	1	2
<i>Melanostoma mellinum</i> (LINNAEUS, 1758)		2		1	7		10	3	8
<i>Melanostoma mellinum</i> (LINNAEUS, 1758) agg.	*			4			4	1	4
<i>Melanostoma scalare</i> (FABRICIUS, 1794)					1		1	1	1
<i>Meliscaeva auricollis</i> (MEIGEN, 1822)		1	1	75	96	1	174	5	173
<i>Meliscaeva auricollis</i> var. <i>maculicornis</i> ZETTERSTEDT, 1822				9	16		25	2	25
<i>Meliscaeva cinctella</i> (ZETTERSTEDT, 1843)					11	1	12	2	12
<i>Merodon aberrans</i> EGGER, 1860	AV				1		1	1	1
<i>Merodon trebevicensis</i> STROBL, 1909	AV				1		1	1	1
<i>Milesia semiluctifera</i> (VILLERS, 1789)				1			1	1	1
<i>Myathropa florea</i> (LINNAEUS, 1758)				10	37		47	2	47
<i>Myolepta dubia</i> (FABRICIUS, 1805)				1	4		5	2	5
<i>Myolepta potens</i> (HARRIS, 1780)					1		1	1	1
<i>Neoascia annexa</i> (MÜLLER, 1776)					1		1	1	1
<i>Orthonevra geniculata</i> (MEIGEN, 1830)	*				1		1	1	1
<i>Orthonevra nobilis</i> (FALLÉN, 1817)				1	2		3	2	3
<i>Orthonevra tristis</i> (LOEW, 1871)					1		1	1	1
<i>Pandasyophthalmus</i> spec. ♀♀		1	4				5	2	4
<i>Paragus bicolor</i> group ♀♀	DD		1				1	1	1
<i>Paragus bicolor</i> (FABRICIUS, 1794)			2		1		3	2	3
<i>Paragus haemorrhous</i> MEIGEN, 1822			2				2	1	2
<i>Paragus pecchiolii</i> RONDANI, 1857		1	4				5	2	4
<i>Paragus</i> spec. ♀♀			14	1	1	2	18	4	18
<i>Parasyrphus annulatus</i> (ZETTERSTEDT, 1838)					1		1	1	1
<i>Parasyrphus lineolus</i> (ZETTERSTEDT, 1843)				15	22	1	38	3	38
<i>Parasyrphus macularis</i> (ZETTERSTEDT, 1843)	DD *				3	1	4	2	4
<i>Parasyrphus punctulatus</i> (VERRALL, 1873)				1	8		9	2	9
<i>Parasyrphus vittiger</i> (ZETTERSTEDT, 1843)				13	34	8	55	3	55
<i>Pipiza lugubris</i> (FABRICIUS, 1722)	*				1		1	1	1
<i>Pipiza noctiluca</i> (LINNAEUS, 1758)				1			1	1	1
<i>Pipiza quadrimaculata</i> (PANZER, 1804)					1		1	1	1
<i>Pipizella viduata</i> (LINNAEUS, 1758)					1		1	1	1
<i>Pipizella</i> spec. ♀♀			2		3		5	2	5

**Tab. 5:** Results of the Syrphidae from Malaise traps in north-eastern Greece in 2007 (part 4).

Syrphidae	det. / vid. New to Greece	Malaise traps with locality no.					sum of specimens number of traps	sum Rhodope Mts.	
		6985 Chrisoupolis	6986 Sideronero	6987 Elatio	6988 Elatio	6989 Elatio			
<i>Platycheirus albimanus</i> (FABRICIUS, 1781)				11	98		109	2	109
<i>Platycheirus angustatus</i> (ZETTERSTEDT, 1843)	*			1			1	1	1
<i>Platycheirus clypeatus</i> (MEIGEN, 1822)	*		1				1	1	1
<i>Platycheirus nielsenii</i> VOCKEROTH, 1990	*				2		2	1	2
<i>Platycheirus occultus</i> GOELDLIN, MAIBACH & SPEIGHT, 1990	*				1		1	1	1
<i>Platycheirus peltatus</i> (MEIGEN, 1822)	*			1	4		5	2	5
<i>Platycheirus scutatus</i> (MEIGEN, 1822)				4	2		6	2	6
<i>Psilota atra</i> (FALLÉN, 1817)					1		1	1	1
<i>Rhingia campestris</i> MEIGEN, 1822	*				4		4	1	4
<i>Scaeva dignota</i> (RONDANI, 1857)			1	1	2		4	3	4
<i>Scaeva pyrastris</i> (LINNAEUS, 1758)		1	1	4	2	1	9	5	8
<i>Scaeva selenitica</i> (MEIGEN, 1822)			1	3	8	4	16	4	16
<i>Sericomyia silentis</i> (HARRIS, [1776])					1		1	1	1
<i>Spazigaster ambulans</i> (FABRICIUS, 1798)	*				5		5	1	5
<i>Sphaerophoria scripta</i> (LINNAEUS, 1758)			58	54	21	1	134	4	134
<i>Sphagina clunipes</i> (FALLÉN, 1816)				1	10		11	2	11
<i>Spilomyia manicata</i> (RONDANI, 1865)				2	2		4	2	4
<i>Spilomyia saltuum</i> (FABRICIUS, 1794)				1	1		2	2	2
<i>Syrritta pipiens</i> (LINNAEUS, 1758)			1		7		8	2	8
<i>Syrphus ribesii</i> (LINNAEUS, 1758)			4	6	18		28	3	28
<i>Syrphus torvus</i> OSTEN-SACKEN, 1875				3	2	1	6	3	6
<i>Syrphus vitripennis</i> MEIGEN, 1822			1	18	5		24	3	24
<i>Temnostoma bombylans</i> (FABRICIUS, 1805)	*				2		2	1	2
<i>Temnostoma vespiforme</i> (LINNAEUS, 1758)					1		1	1	1
<i>Volucella bombylans</i> var. <i>plumata</i> DEGEER, 1758					1		1	1	1
<i>Volucella inanis</i> (LINNAEUS, 1758)				1	1		2	2	2
<i>Volucella pellucens</i> (LINNAEUS, 1758)				1	7		8	2	8
<i>Xanthandrus comtus</i> (HARRIS, 1780)				4	5		9	2	9
<i>Xanthogramma dives</i> (RONDANI, 1857)		1	3	1			5	3	4
<i>Xanthogramma stackelbergi</i> VIOLOVITSH, 1975					1		1	1	1
<i>Xylota florum</i> (FABRICIUS, 1805)	*				1		1	1	1
<i>Xylota jakutorum</i> BAGATSHANOVA, 1980					20		20	1	20
<i>Xylota segnis</i> (LINNAEUS, 1758)					1		1	1	1
<i>Xylota sylvarum</i> (LINNAEUS, 1758)					10		10	1	10
<i>Xylota tarda</i> MEIGEN, 1822					5		5	1	5
<b>sum of specimens count</b>		<b>32</b>	<b>179</b>	<b>490</b>	<b>995</b>	<b>40</b>	<b>1735</b>	<b>–</b>	<b>1704</b>
<b>corrected number of species</b>		<b>11</b>	<b>29</b>	<b>75</b>	<b>125</b>	<b>21</b>	<b>152</b>	<b>–</b>	<b>151</b>
		<b>11</b>	<b>25</b>	<b>72</b>	<b>120</b>	<b>20</b>	<b>144</b>	<b>–</b>	<b>143</b>

Tab. 6: Flower-visiting of Syrphidae in north-eastern Greece during April 2007.

Syrphidae	Plants											sum of specimens	Plant species				
	<i>Anthemis</i> cf. <i>tomentosa</i>	<i>Crataegus monogyna</i>	<i>Euphorbia characias</i>	<i>Euphorbia cyparissias</i>	<i>Euphorbia helioscopia</i>	<i>Euphorbia seguierana</i>	<i>Geranium robertianum</i>	<i>Plantago lagopus</i>	<i>Quercus coccifera</i>	<i>Ranunculus repens</i>	<i>Ranunculus sceleratus</i> <i>Raphanus</i> <i>raphanistrum</i>			<i>Rapistrum rugosum</i> <i>Scandix pecten-veneris</i>	<i>Smiranium olusatrum</i>		
<i>Brachypalpoides lentus</i>	2												2	1			
<i>Chalcosyrphus nemorum</i>	1												1	1			
<i>Chrysotoxum cautum</i>					1								1	1			
<i>Chrysotoxum vernale</i>	6	3	64		8				1				82	5			
<i>Criorhina floccosa</i>	10												10	1			
<i>Criorhina pachymera</i>	22												22	1			
<i>Epistrophe eligans</i>	1							1				1	3	3			
<i>Episyrphus balteatus</i>	3		3	10	2			6	4		1	4	33	8			
<i>Eristalinus sepulchralis</i>	2								3				5	2			
<i>Eristalinus taeniops</i>			1										1	1			
<i>Eristalis arbustorum</i>	2	10	8		6				1		1		28	6			
<i>Eristalis interrupta</i>	1		3										4	2			
<i>Eristalis similis</i>	1												1	1			
<i>Eristalis tenax</i>	39		5	2					2			3	51	5			
<i>Eumerus amoenus</i>												1	1	1			
<i>Eupeodes corollae</i>	6			20					4	2			32	4			
<i>Eupeodes lucasi</i>								1					1	1			
<i>Eupeodes luniger</i>											1	2	3	2			
<i>Eurimyia lineatus</i>									1				1	1			
<i>Helophilus affinis</i>	1												1	1			
<i>Helophilus pendulus</i>	3	2											5	2			
<i>Helophilus trivittatus</i>	2								8				10	2			
<i>Heringia heringi</i>								2					2	1			
<i>Lejogaster tarsata</i>	1								5				6	2			
<i>Melanostoma mellinum</i>	1												3	2			
<i>Meliscaeva auricollis</i> var. <i>maculicornis</i>	1				1			3					5	3			
<i>Merodon clavipes</i>					6								6	1			
<i>Myathropa florea</i>	38		29	2								13	82	4			
<i>Pandasyophthalmus</i> spec. ♀♀					1							1	2	2			
<i>Paragus bicolor</i>												1	1	1			
<i>Paragus haemorrhous</i>												2	2	1			
<i>Scaeva albomaculata</i>								1					1	1			
<i>Scaeva pyrastris</i>	1												1	1			
<i>Sphaerophoria rueppellii</i>									3				3	1			
<i>Sphaerophoria scripta</i>	2	1	4	2	5	2			7	2	2	3	30	10			
<i>Syritta pipiens</i>	1	3	3						2		1	4	14	6			
<i>Xanthogramma pedissequum</i>												2	2	1			
<b>sum of specimens</b>	<b>15</b>	<b>147</b>	<b>4</b>	<b>117</b>	<b>38</b>	<b>31</b>	<b>2</b>	<b>2</b>	<b>14</b>	<b>1</b>	<b>40</b>	<b>4</b>	<b>5</b>	<b>12</b>	<b>26</b>	<b>458</b>	<b>15</b>
<b>Syrphid species</b>	<b>6</b>	<b>20</b>	<b>2</b>	<b>8</b>	<b>6</b>	<b>8</b>	<b>1</b>	<b>1</b>	<b>6</b>	<b>1</b>	<b>11</b>	<b>2</b>	<b>4</b>	<b>6</b>	<b>7</b>	<b>37</b>	<b>–</b>

Tab. 7: Flower-visiting of Syrphidae in north-eastern Greece during August 2008 (part 1a).

Syrphidae	Plants	<i>Achillea millefolium</i>	<i>Allium moschatum</i>	<i>Angelica sylvestris</i>	<i>Berteroa obliqua</i>	<i>Calamintha clinopodium</i>	<i>Carum rigidulum</i>	<i>Cichorium intybus</i>	<i>Coryza canadensis</i>	<i>Crepis capillaris</i>	<i>Crepis palustris</i>	<i>Daucus carota</i>	<i>Doronicum austriacum</i>	<i>Epilobium angustifolium</i>	<i>Eryngium campestre</i>	<i>Euphorbia seguierana</i>	<i>niciiana</i>	<i>Foeniculum vulgare</i>
<i>Arctophila bombiformis</i>																		
<i>Callicera aurata</i>																		
<i>Ceriana vespiformis</i>																		4
<i>Chalcosyrphus piger</i>																		
<i>Cheilosia aerea</i>												1						
<i>Cheilosia illustrata</i>																		
<i>Cheilosia longula</i>																		
<i>Cheilosia soror</i>				1								2						
<i>Chrysogaster basalis</i>																		
<i>Chrysogaster solstitialis</i>																		
<i>Chrysotoxum bicinctum</i>																		
<i>Chrysotoxum fasciolatum</i>																		
<i>Chrysotoxum festivum</i>																		
<i>Episyrphus balteatus</i>								3										
<i>Eristalinus aeneus</i>																		
<i>Eristalinus sepulchralis</i>																		
<i>Eristalinus taeniops</i>				2														10
<i>Eristalis arbustorum</i>		2		1	209		2	1				9				1		
<i>Eristalis interrupta</i>				1														
<i>Eristalis jugorum</i>																		
<i>Eristalis pertinax</i>													1					
<i>Eristalis similis</i>							2						6				2	
<i>Eristalis tenax</i>				5	6	2		6		2	3	3	3	2		41	2	
<i>Eumerus barbarus</i>																		4
<i>Eumerus spec. ♀♀</i>																		
<i>Eupeodes corollae</i>							3					1						1
<i>Eupeodes luniger</i>								1										
<i>Fagisyrphus cinctus</i>													1					
<i>Melangyna compositarum</i>																		
<i>Meliscaeva auricollis</i>																		
<i>Merodon avidus</i>		1		5			14											
<i>Merodon chalybeatus</i>							4		1									

Tab. 7: Flower-visiting of Syrphidae in north-eastern Greece during August 2008 (part 1b).

Syrphidae	Plants	<i>Galium verum</i>	<i>Heracleum sphondylium ternatum</i>	<i>Heracleum sphondylium verticillatum</i>	<i>Heracleum sphondylium</i>	<i>Hypericum maculatum</i>	<i>Knautia dipsacifolia</i>	<i>Knautia drymeja</i>	<i>Knautia midzorensis</i>	<i>Lycopus europaeus</i>	<i>Mentha longifolia</i>	<i>Nepeta nuda</i>	<i>Origanum vulgare</i>	<i>Parnassia palustris</i>	<i>Pastinaca hirsuta</i>	<i>Pastinaca sativa</i>	<i>Peucedanum aegopodioides</i>	
<i>Arctophila bombiformis</i>					1				7									
<i>Callicera aurata</i>						1												
<i>Ceriana vespiformis</i>																		
<i>Chalcosyrphus piger</i>					1												1	
<i>Cheilosia aerea</i>																		1
<i>Cheilosia illustrata</i>					4													
<i>Cheilosia longula</i>					1													2
<i>Cheilosia soror</i>																		
<i>Chrysogaster basalis</i>					1												1	1
<i>Chrysogaster solstitialis</i>					7									1				11
<i>Chrysotoxum bicinctum</i>																1		8
<i>Chrysotoxum fasciolatum</i>																		
<i>Chrysotoxum festivum</i>					3											1		4
<i>Episyrphus balteatus</i>																	1	1
<i>Eristalinus aeneus</i>																		
<i>Eristalinus sepulchralis</i>																		
<i>Eristalinus taeniops</i>																		
<i>Eristalis arbustorum</i>													51	12				54
<i>Eristalis interrupta</i>					12							4						182
<i>Eristalis jugorum</i>							2	4										
<i>Eristalis pertinax</i>					4				2		3							23
<i>Eristalis similis</i>						95					29							158
<i>Eristalis tenax</i>		4	3	64	3	18	80	65		178	28	124	2	1	455			
<i>Eumerus barbarus</i>																		
<i>Eumerus spec.</i> ♀♀																		
<i>Eupeodes corollae</i>																		1
<i>Eupeodes luniger</i>																		
<i>Fagisyrphus cinctus</i>																		
<i>Melangyna compositarum</i>																		2
<i>Meliscaeva auricollis</i>																		1
<i>Merodon avidus</i>																		
<i>Merodon chalybeatus</i>																		

**Tab. 7:** Flower-visiting of Syrphidae in north-eastern Greece during August 2008 (part 1c).

Syrphidae	Plants	<i>Polygonum persicaria</i>	<i>Potentilla erecta</i>	<i>Pulicaria dysenterica</i>	<i>Rubus fruticosus</i>	<i>Sambucus ebulus</i>	<i>Scabiosa columbaria</i>	<i>Scabiosa ochroleuca</i>	<i>Senecio jacobaea</i>	<i>Thymus degenii</i>	<i>Torilis japonica</i>	<i>Verbascum densiflorum</i>	<i>Verbascum longifolium</i>	<i>Verbascum nigrum</i>	<i>Verbascum pinnatifidum</i>	<i>Verbascum speciosum megaphlomos</i>	sum of specimens	Plant species
<i>Arctophila bombiformis</i>																	8	2
<i>Callicera aurata</i>												15				34	50	3
<i>Ceriana vespiformis</i>																	4	1
<i>Chalcosyrphus piger</i>												1					3	3
<i>Cheilosia aerea</i>																	2	2
<i>Cheilosia illustrata</i>																	4	1
<i>Cheilosia longula</i>																	3	2
<i>Cheilosia soror</i>											12						15	3
<i>Chrysogaster basalis</i>																	3	3
<i>Chrysogaster solstitialis</i>																	19	3
<i>Chrysotoxum bicinctum</i>																	9	2
<i>Chrysotoxum fasciolatum</i>																2	2	1
<i>Chrysotoxum festivum</i>																	8	3
<i>Episyrphus balteatus</i>						5											10	4
<i>Eristalinus aeneus</i>															3		3	1
<i>Eristalinus sepulchralis</i>				2													2	1
<i>Eristalinus taeniops</i>																	12	2
<i>Eristalis arbustorum</i>							2					2			1		347	13
<i>Eristalis interrupta</i>							120					4			4		327	7
<i>Eristalis jugorum</i>												1					7	3
<i>Eristalis pertinax</i>							53								4		90	7
<i>Eristalis similis</i>							91					2					385	8
<i>Eristalis tenax</i>					1	314	20	1	4		1	20	2	2	27		1489	33
<i>Eumerus barbarus</i>																	4	1
<i>Eumerus spec.</i> ♀♀															8		8	1
<i>Eupeodes corollae</i>						1									1		8	6
<i>Eupeodes luniger</i>												2			5		8	3
<i>Fagisyrphus cinctus</i>						1											2	2
<i>Melangyna compositarum</i>															1		3	2
<i>Meliscaeva auricollis</i>															1		2	2
<i>Merodon avidus</i>														4	2		26	5
<i>Merodon chalybeatus</i>																	5	2

Tab. 7: Flower-visiting of Syrphidae in north-eastern Greece during August 2008 (part 2a).

Syrphidae	Plants	<i>Achillea millefolium</i>	<i>Allium moschatum</i>	<i>Angelica sylvestris</i>	<i>Berteroa obliqua</i>	<i>Calamintha clinopodium</i>	<i>Carum rigidulum</i>	<i>Cichorium intybus</i>	<i>Coryza canadensis</i>	<i>Crepis capillaris</i>	<i>Crepis palustris</i>	<i>Daucus carota</i>	<i>Doronicum austriacum</i>	<i>Epilobium angustifolium</i>	<i>Eryngium campestre</i>	<i>Euphorbia seguierana niciciana</i>	<i>Foeniculum vulgare</i>	
<i>Merodon cinereus</i>																		
<i>Merodon italicus</i>												3						
<i>Milesia semiluctifera</i>				1														2
<i>Myathropa florea</i>				3	3			1										3 3
<i>Pandasyopthalmus</i> spec. ♀♀																		2
<i>Paragus albifrons</i>																1	1	
<i>Paragus</i> (s. str.) spec. ♀♀																		
<i>Parhelophilus versicolor</i>																		
<i>Platycheirus albimanus</i>																		
<i>Scaeva pyrastris</i>																		
<i>Spazigaster ambulans</i>																		
<i>Sphaerophoria scripta</i>		1			5		3	8					1					1
<i>Syrirta pipiens</i>		2	7	7				3	1			3			22	12	7	
<i>Syrphus torvus</i>																		
<i>Syrphus vitripennis</i>																		
<i>Volucella inanis</i>																		
<i>Volucella pellucens</i>																		
<i>Volucella zonaria</i>				7														
<i>Xanthogramma stackelbergi</i>				1														
<i>Xylota segnis</i>																		
<b>sum of specimens</b>		<b>5</b>	<b>1</b>	<b>26</b>	<b>238</b>	<b>2</b>	<b>10</b>	<b>42</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>23</b>	<b>12</b>	<b>2</b>	<b>24</b>	<b>74</b>	<b>25</b>	
<b>Syrphid species</b>		<b>3</b>	<b>1</b>	<b>8</b>	<b>8</b>	<b>1</b>	<b>4</b>	<b>10</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>8</b>	<b>5</b>	<b>1</b>	<b>3</b>	<b>11</b>	<b>8</b>	

Tab. 7: Flower-visiting of Syrphidae in north-eastern Greece during August 2008 (part 2b).

Syrphidae	Plants	<i>Galium verum</i>	<i>Heracleum sphondylium ternatum</i>	<i>Heracleum sphondylium verticillatum</i>	<i>Heracleum sphondylium</i>	<i>Hypericum maculatum</i>	<i>Knautia dipsacifolia</i>	<i>Knautia drymeja</i>	<i>Knautia midzorensis</i>	<i>Lycopus europaeus</i>	<i>Mentha longifolia</i>	<i>Nepeta nuda</i>	<i>Origanum vulgare</i>	<i>Parnassia palustris</i>	<i>Pastinaca hirsuta</i>	<i>Pastinaca sativa</i>	<i>Peucedanum aegopodioides</i>	
<i>Merodon cinereus</i>																		
<i>Merodon italicus</i>																		
<i>Milesia semiluctifera</i>																		
<i>Myathropa florea</i>				18							1				3	38	6	
<i>Pandasyophthalmus</i> spec. ♀♀																		1
<i>Paragus albifrons</i>																		
<i>Paragus</i> (s. str.) spec. ♀♀																		2
<i>Parhelophilus versicolor</i>																	1	
<i>Platycheirus albimanus</i>																		
<i>Scaeva pyrastris</i>					1											3	6	
<i>Spazigaster ambulans</i>		2												1				
<i>Sphaerophoria scripta</i>				1	2					3	2				1	4		
<i>Syritta pipiens</i>													83	2				5
<i>Syrphus torvus</i>					3													4
<i>Syrphus vitripennis</i>					3													4
<i>Volucella inanis</i>					1			6										1
<i>Volucella pellucens</i>					2			15		2								
<i>Volucella zonaria</i>										2								
<i>Xanthogramma stackelbergi</i>																		
<i>Xylota segnis</i>																		
<b>sum of specimens</b>		2	4	4	224	4	20	84	96	3	355	40	126	5	12	967	17	
<b>Syrphid species</b>		1	1	2	19	2	2	2	6	1	10	2	2	4	8	27	7	



Tab. 7: Flower-visiting of Syrphidae in north-eastern Greece during August 2008 (part 2c).

Syrphidae	Plants														sum of specimens	Plant species	
	<i>Polygonum persicaria</i>	<i>Potentilla erecta</i>	<i>Pulicaria dysenterica</i>	<i>Rubus fruticosus</i>	<i>Sambucus ebulus</i>	<i>Scabiosa columbaria</i>	<i>Scabiosa ochroleuca</i>	<i>Senecio jacobaea</i>	<i>Thymus degenii</i>	<i>Torilis japonica</i>	<i>Verbascum densiflorum</i>	<i>Verbascum longifolium</i>	<i>Verbascum nigrum</i>	<i>Verbascum pinnatifidum</i>			<i>Verbascum speciosum megaphlomos</i>
<i>Merodon cinereus</i>								14								14	1
<i>Merodon italicus</i>																3	1
<i>Milesia semiluctifera</i>																3	2
<i>Myathropa florea</i>					14					1				2	96	13	
<i>Pandasyopthalmus</i> spec. ♀♀															3	2	
<i>Paragus albifrons</i>															2	2	
<i>Paragus</i> (s. str.) spec. ♀♀					2										4	2	
<i>Parhelophilus versicolor</i>					1										2	2	
<i>Platycheirus albimanus</i>													4		4	1	
<i>Scaeva pyrastris</i>					1								1		12	5	
<i>Spazigaster ambulans</i>					1										4	3	
<i>Sphaerophoria scripta</i>		4			2			8							46	15	
<i>Syrirta pipiens</i>	3								4			8	2		171	16	
<i>Syrphus torvus</i>					2					2	1		2		14	6	
<i>Syrphus vitripennis</i>					7					1			3		18	5	
<i>Volucella inanis</i>					26										34	4	
<i>Volucella pellucens</i>					75										94	4	
<i>Volucella zonaria</i>					5										14	3	
<i>Xanthogramma stackelbergi</i>					1										2	2	
<i>Xylota segnis</i>					2										2	1	
<b>sum of specimens</b>	<b>3</b>	<b>5</b>	<b>2</b>	<b>1</b>	<b>729</b>	<b>20</b>	<b>1</b>	<b>4</b>	<b>22</b>	<b>17</b>	<b>53</b>	<b>3</b>	<b>12</b>	<b>15</b>	<b>94</b>	<b>3434</b>	<b>49</b>
<b>Syrphid species</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>24</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>13</b>	<b>2</b>	<b>2</b>	<b>4</b>	<b>16</b>	<b>76</b>	<b>–</b>