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## Notes on the Pipunculidae fauna (Diptera) of Switzerland

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Additional records to the Swiss pipunculid fauna are presented, based on collections from Swiss musea, and including material from two year cycles of Malaise trap catches. One species is described as new to science: *Eudorylas kozaneki* sp.n. Thirty-eight other species are reported for the first time from Switzerland. These new additions are briefly discussed and a preliminary checklist of the Swiss pipunculid fauna, comprising 50 species, is given. The phenological data from the Malaise trap year-cycles are compared with those from other European regions.

Keywords: Pipunculidae, Switzerland, faunistics, phenology

### INTRODUCTION

Pipunculidae (Diptera) are small inconspicuous flies, closely related to the hoverflies (Syrphidae). They can be readily differentiated from the latter by the large compound eyes occupying most of the hemispherical head and by the differences in wing venation (open cell  $R_5$ , no vena spuria). During their larval stage they are known to be parasitoids of Auchenorrhyncha (Homoptera).

During the last decade, the research on European Pipunculidae has increased considerably (DE MEYER, 1989b) and several faunal surveys and systematic revisions have been published. The Swiss fauna, however, was still poorly known in comparison to some neighbouring countries (DE MEYER, 1992). Previously, only 11 Pipunculidae were reported from this country, including a few species of which type material originated from Switzerland (see TANASYTSHUK, 1988). In addition several new Swiss records for the genus *Dorylomorpha* were reported in the monograph of ALBRECHT (1990) (see table 1 for complete checklist).

### MATERIAL AND METHODS

The present contribution to knowledge of the Swiss pipunculid fauna is mainly based on material from the Musée d'Histoire Naturelle de Neuchâtel (MHNN), which was kindly put at the author's disposal by Mr. J.-P. HAENNI. This comprises dry pinned specimens collected at various places in the country, as well as material from two year cycles of Malaise trap catches. The Malaise traps were placed at the following localities:

At Vezia TI (Southern Switzerland) in 1979: the trap was placed in the garden (standard type with lawn) of a cottage in the vicinity of a wet marshy forest and situated at the foot of a hill slope with thermophilous bushes (HAENNI, pers. comm.).

In Rochefort NE (NW Swiss Jura) in 1982: the trap was placed in a thermophilous environment near calcareous rocks overlooking the river Areuse and bordering a submediterranean *Quercus pubescens* forest, succeeded by a beech wood (HAENNI & DUFOUR, 1983).

In addition, a small collection provided by the Muséum d'Histoire naturelle de Genève (MHNG), put at my disposal by Dr. C. BESUCHET, was studied. Altogether 450 specimens were examined.

Species were identified with the following keys: JERVIS (1992) for *Chalarus*; GROOTAERT & DE MEYER (1986) for *Nephrocerus*; KOZANEK (1981) for *Pipunculus*;

Table 1: Preliminary checklist of Pipunculidae of Switzerland. References: 1: TANASIJTSHUK (1988); 2: ALBRECHT (1990); \*: new to the Swiss fauna.

Genus	species	Reference
<i>Chalarus</i>	<i>decorus</i> JERVIS	*
	<i>juliae</i> JERVIS	*
	<i>pughi</i> COE	*
	<i>spurius</i> (FALLEN)	*
<i>Verrallia</i>	<i>aucta</i> (FALLEN)	*
	<i>villosa</i> (VON ROSER)	*
<i>Jassidophaga</i>	<i>flavicornis</i> ZETTERSTEDT	*
	<i>lapponicus</i> ZETTERSTEDT	*
<i>Nephrocerus</i>	<i>scutellatus</i> (MACQUART)	*
	<i>campestris</i> LATREILLE	*
<i>Pipunculus</i>	<i>fonsecai</i> COE	*
	<i>omissinervis</i> BECKER	1
	<i>spinipes</i> MEIGEN	*
	<i>thomsoni</i> BECKER	*
	<i>zugmayeriae</i> KOWARZ	*
	<i>furcata</i> (EGGER)	*
	<i>aeneus</i> FALLEN	*
	<i>carinatus</i> (VERRALL)	*
	<i>obtusinervis</i> (ZETTERSTEDT)	*
<i>Cephalosphaera</i>	<i>semifumosus</i> (KOWARZ)	*
	<i>subultimus</i> COE	*
<i>Cephalops</i>	<i>ultimus</i> BECKER	*
	<i>vittipes</i> (ZETTERSTEDT)	*
<i>Eudorylas</i>	<i>fuscipes</i> (ZETTERSTEDT)	*
	<i>inferus</i> COLLIN	*
	<i>jenkinsoni</i> COE	*
	<i>kozaneki</i> sp. n.	*
	<i>montium</i> (BECKER)	1
	<i>obliquus</i> COE	*
	<i>obscurus</i> COE	*
	<i>ruralis</i> (MEIGEN)	*
	<i>subfascipes</i> COLLIN	*
	<i>subterminalis</i> COLLIN	*
<i>Dorylomorpha</i>	<i>zermattensis</i> (BECKER)	1
	<i>zonatus</i> (ZETTERSTEDT)	*
	<i>albitarsis</i> (ZETTERSTEDT)	2
	<i>beckeri</i> (ACZEL)	*
	<i>borealis</i> (WAHLGREN)	2
	<i>confusa</i> (VERRALL)	2
	<i>extricata</i> (COLLIN)	2
	<i>imparata</i> (COLLIN)	2
	<i>maculata</i> (WALKER)	2
	<i>platystylis</i> ALBRECHT	*
<i>Tomosvaryella</i>	<i>rufipes</i> (MEIGEN)	2
	<i>xanthocera</i> (KOWARZ)	2
	<i>cilitarsis</i> (STROBL)	*
	<i>coquilletti</i> (KERTESZ)	*
	<i>geniculata</i> (MEIGEN)	*
	<i>kuthyi</i> (ACZEL)	*
	<i>sylvatica</i> (MEIGEN)	*

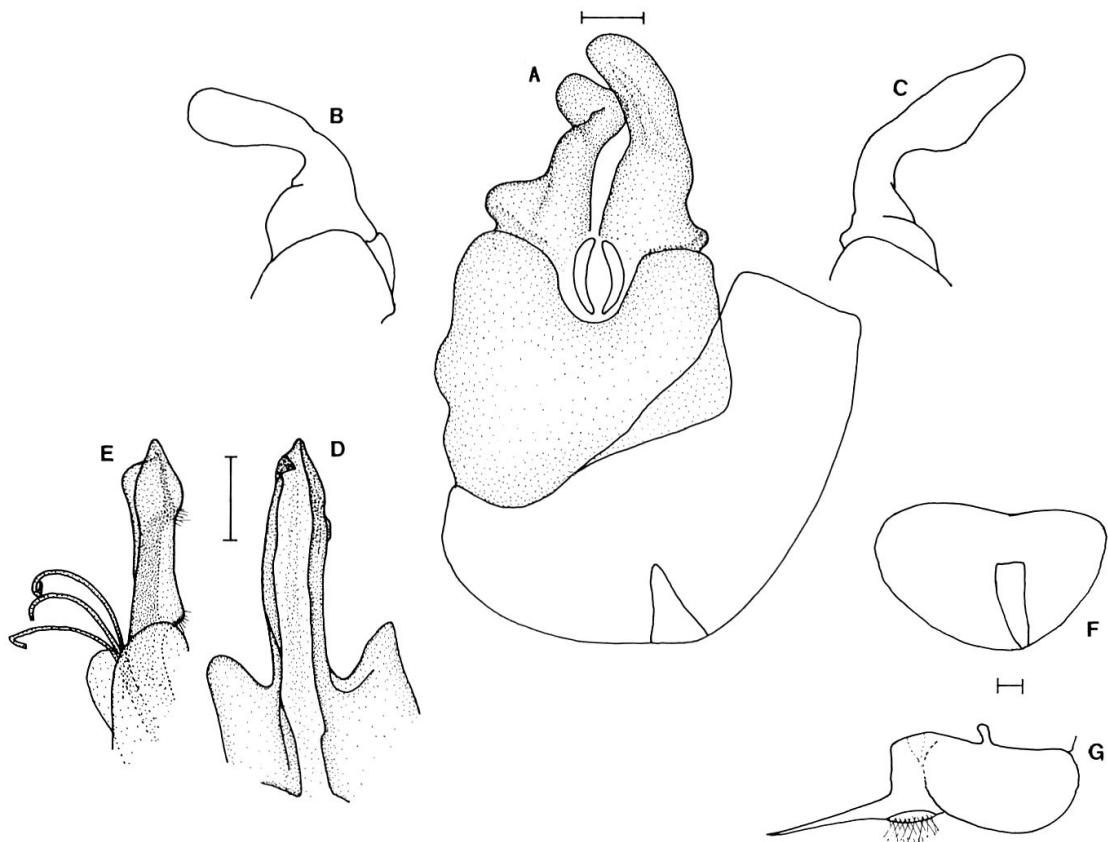


Fig. 1: Terminalia of *Eudorylas kozaneki* sp.n. A, Male genitalia showing surstyli in dorsal view; B, outer surstyli lateral view; C, inner surstyli lateral view; D, apical part aedeagus ventral view; E, apical part aedeagus and ejaculatory duct lateral view; F, male sternum 8 distal view; G, female ovipositor lateral view.

ALBRECHT (1990) for *Dorylomorpha*; ACZEL (1939) for *Tomosvaryella*; DE MEYER (1989a) and ACKLAND (in press) for *Cephalops*; and COE (1966) and BANKOWSKA (1973) for the other genera. In addition BENTON (1975) was consulted for illustrations of some *Eudorylas* species. Identification of *Eudorylas* species still causes problems since no comprehensive keys are available. One *Eudorylas* species could not be placed in any of the recognized species and is described here as new to science.

Only species new to the Swiss fauna are listed below. Locality and date is given (for the Malaise trap material we refer to tables 2 and 3) and the general distribution of the species in Europe is shortly discussed.

#### *Eudorylas kozaneki* sp.n.

Type material. Holotype: ♂, Switzerland, NE, Rochefort, 780m, Château (coordinates: 551.35/201.75), 10-12.VIII.1982, leg. C. DUFOUR (Malaise trap). Allotype: ♀, same date and locality as holotype. Paratypes: 2♂♂ 3♀♀, same date and locality as holotype. 1♂ 1♀, same locality, 17-21.VII.1982; 2♂♂ 2♀♀, 27.VII-1.VIII.1982; 1♂ 1♀, 2-5.VIII.1982; 2♀♀, 6-9.VIII.1982; 2♂♂ 2♀♀, 13-15.VIII.1982; 1♂ 1♀, 16-18.VIII.1982; 1♂, 19-22.VIII.1982; 1♀, 30.VIII-

1.IX.1982; 2♀♀, 2-5.IX.1982; 1♀, 27-29.IX.1982. Holotype, allotype and paratypes returned to the Musée d'Histoire naturelle de Neuchâtel. Paratypes also deposited in collections of the Koninklijk Belgisch Instituut voor Natuurwetenschappen, Brussels Belgium.

Body length: 3.2-3.7 mm. Wing length: 3.5-4.0 mm.

*Male.* Third antennal segment yellow-brown; acuminate. Second antennal segment dark brown. Frons: Eyes touching for distance equal to 3 times ocellar triangle; lower part occupying 2/5 of entire length, silver-grey pubescent; upper part shining black. Face silver-grey pubescent. Occiput silver-grey pubescent, upper part more brownish.

Thorax: Humeri paler than mesonotum, yellowish. Dorsocentral rows of hairs very short, darkish. Mesonotum brownish dusted, weakly subshining. Pleura more greyish dusted. Stem of halteres whitish, base and knob brownish yellow.

Legs: Femora dark except apical margin. Tibiae yellow, except apical half brownish at least ventrally. Tarsal segments yellow, except last tarsal segment brown. Pulvilli about as long as last tarsal segment.

Wings: Third costal section as long as fourth costal section. Pterostigma fully colored. Cross-vein r-m placed at basal third of discal cell.

Abdomen: Lateral fan weakly developed with 2 black bristles. Abdominal terga brownish dusted; along posterolateral margins more greyish, especially at last terga. In dorsal view sternum 8 as long as tergum 5. Membraneous area small and elongated, occupying less than half of sternum 8.

Male terminalia (Fig. 1): surstyli asymmetrical, elongated, bases broadened; inner surstylus truncated and strongly bent outwards in apical part. Ejaculatory duct trifid, short tubiform.

*Female.* As male except for the following characters. Third antennal segment longer acuminate. Eyes not touching, frons not widened in middle; above antennae silver-grey pubescent, gradually diminishing, upper part shining black. Pulvilli very long, three times as long as last tarsal segment. Dusting more greyish, along anterior part of mesonotum, along lateral sides of abdominal terga. Third costal section 1/3 till 2/5 of length of fourth section.

Female terminalia. Base large, rounded below; median groove very weak, hardly present. Piercer straight, thin.

*Etymology.* This species is named in honour of Dr. Milan KOZANEK (Slovak Republic) who has been working on Pipunculidae for more than 10 years.

*Discussion.* *E. kozaneki* sp.n. can be easily differentiated from any other West-European species by the elongated and asymmetrical surstyli. It is closely related to *E. angustimembranus* KOZANEK & KWON, 1991 described from North Korea, which also shows elongated surstyli. In *E. kozaneki* however, the inner surstylus is curved strongly outwards at its apical end and it is broadened in lateral view distally. Also, the broadened bases of the surstyli are less outspoken in *E. kozaneki* sp.n.

*Chalarus decorus* JERVIS, 1992

4♀♀, Vezia TI, 1979 (MHNN)

JERVIS described this species recently from the Netherlands and also reported it from several European countries. He did not describe the male (since males of the *spurius*-group, to which *C. decorus* belongs, seem to be difficult to differentiate). One male specimen was found with the females, and we assume it belongs to the same species.

*Chalarus juliae* JERVIS, 1992

1♀, Rochefort NE, 1982 (MHNN)

This species was also recently described by JERVIS from France and additionally reported from England, Finland and Sweden. It is closely related to *C. pughi* but shows some differences in the shape of the ovipositor.

*Chalarus pughi* COE, 1966

1♀, Couvet NE, 6-9.VIII.1984; 3♀♀, Rochefort NE, 1982 (MHNN)

A widespread species, reported from several European countries, including Austria and Czechoslovakia. One male specimen which was associated with the female specimen probably belongs here. According to JERVIS (1992) the male is unknown.

*Chalarus spurius* (?) (FALLEN, 1816)

5♀♀, Rochefort NE, 1982 (MHNN)

These female specimens probably belong to the most widespread *Chalarus* species. Identification is, however, not certain because of close resemblance to other species of the *C. spurius*-group. In addition, a few *Chalarus* specimens were found which could not be placed in any of the species recognized by JERVIS (1992).

*Verrallia aucta* (FALLEN, 1817)

4♀♀, Vezia TI, 1979 (MHNN)

A very widespread species, reported from all European regions. According to LAUTERER (1981) it occupies a variety of habitats.

*Jassidophaga villosa* (VON ROSER, 1840)

1♂ 8♀♀, Rochefort NE, 1982 (MHNN)

Generally distributed over Europe, and reported from most Central European countries.

*Nephrocerus flavidornis* ZETTERSTEDT, 1844

1♂, Chevenez, La Genevroye JU, 21-28.VI.1988; 1♀, Bressaucourt, Les Echies JU, 28.VI-12.VII.1988 (MHNN)

Compared to *N. scutellatus*, this species seems to have a more northern distribution.

*Nephrocerus lapponicus* ZETTERSTEDT, 1838

1♂, Neuchâtel NE, 13.VI.1987; 1♂ 4♀♀, Rochefort NE, 1982 (MHNN)

The status of this species and its identification was revised by GROOTAERT & DE MEYER (1986). The species is rarer than other *Nephrocerus* species and is only reported from some North and West European countries and from Austria and Czechoslovakia.

*Nephrocerus scutellatus* (MACQUART, 1834)

3♀♀, Rochefort NE, 1982; 2♀♀, Chevenez JU, 7-21.VI.1988; 1♀, 21-28.VI.1988 (MHNN)

As indicated above, it seems to occur further south than *N. flavigornis*.

*Pipunculus campestris* LATREILLE, 1805

40 specimens from the following localities: Burgdorf BE, Genève GE (MHNG), Vezia TI, Couvet NE, Rochefort NE, Chevenez JU, Boncourt JU, Courrendlin JU, Bodio TI (MHNN)

One of the most common Pipunculidae in Europe. Widely distributed.

*Pipunculus fonsecai* (?) COE, 1966

1♀, Vezia TI, 1979 (MHNN)

The identification is not certain. The specimen at hand conforms to the description of *P. fonsecai* in all respects (including the shape of the ovipositor) except that the legs are more yellowish (tibiae completely yellow, femora for at least half of entire length yellow). This is considered a diagnostic character for *P. calceatus* VON ROSER, but the shape of the ovipositor is different. For the time being, we classify this specimen as *P. fonsecai* with a question mark. *P. fonsecai* is a rare species which is known in Central Europe only from Czechoslovakia.

*Pipunculus spinipes* MEIGEN, 1830

11 specimens from the following localities: Couvet NE, Rochefort NE, Vezia TI (MHNN), Peney GE (MHNG)

A fairly common species, reported in Central Europe from Austria and Czechoslovakia. According to KOZANEK (1981) this species is mainly found in light oak forests.

*Pipunculus thomsoni* BECKER, 1898

1♀, Couvet NE, 14-21.VIII.1984; 2♂♂ 2♀♀, Rochefort NE, 1982; 1♂, Le Locle NE, 11.VIII.1987 (MHNN)

Also a widespread species, generally distributed over Europe.

*Pipunculus zugmayeriae* KOWARZ, 1887

1♂, Susch, Inn GR, 12.VI.1986 (MHNN)

Uncommon species, not reported from Northern Europe. In Central Europe only mentioned from Czechoslovakia.

*Cephalosphaera furcata* (EGGER, 1860)

2♀♀, Rochefort NE, 1982 (MHNN)

Very common species. Generally distributed in Europe, and also reported from Japan.

*Cephalops aeneus* FALLEN, 1810

1♀, Couvet NE, 20-21.IX.1984, 1♀, 13-14.X.1984; 2♂♂ 2♀♀, Rochefort NE, 1982 (MHNN)

Common species, reported from all major regions of Europe.

*Cephalops carinatus* (VERRALL, 1901)

1♀, Rochefort NE, 1982 (MHNN)

Fairly common species although not mentioned from Eastern Europe. In Central Europe, mentioned from Austria and Czechoslovakia.

*Cephalops obtusinervis* (ZETTERSTEDT, 1844)

3♂♂ 8♀♀, Rochefort NE, 1982 (MHNN)

Distribution of this species is similar to that of the previous one.

*Cephalops semifumosus* (KOWARZ, 1887)

1♀, Couvet NE, 14-15.VIII.1984; 4♂♂, 1♀, Rochefort NE, 1982 (MHNN)

The most common species of the genus *Cephalops*; widely distributed over Europe.

*Cephalops subultimus* COLLIN, 1956

1♀, Couvet NE, 26-28.VIII.1984; 1♀, Rochefort NE, 1982; 2♂♂, Chevenez JU, 30.VIII-13.IX.1988 (MHNN)

Fairly common species but records from Central Europe are rare and so far only reported from Czechoslovakia.

*Cephalops ultimus* (BECKER, 1900)

31 specimens from the following localities: Vezia TI, Rochefort NE, Chevenez JU, Courrendlin JU (MHNN).

Common species but absent from Northern Europe. In Central Europe, mentioned from Austria and Czechoslovakia.

*Cephalops vittipes* (ZETTERSTEDT, 1844)

7♂♂ 3♀♀, Rochefort NE, 1982 (MHNN).

A widespread species, similar in distribution to *C. aeneus*.

*Eudorylas fuscipes* (ZETTERSTEDT, 1844)

3♂♂ 9♀♀, Vezia TI, 1979 (MHNN)

Generally distributed species, reported in Central Europe from Austria, Czechoslovakia and Hungary.

*Eudorylas inferus* COLLIN, 1956

Couvet NE, 1♂, 3-6.VIII.1984; 1♂, 6-9.VIII.1984 (MHNN)

Uncommon species, mainly occurring in Western and Northern Europe. This is the first record for Central Europe.

*Eudorylas jenkinsoni* COE, 1966

1♀, Couvet NE, 11-13.X.1984; 12♂♂ 16♀♀, Rochefort NE, 1982 (MHNN)

Uncommon species, only reported from a few countries. In Central Europe, only mentioned from Czechoslovakia.

*Eudorylas obliquus* COE, 1966

17 specimens from the following localities: Couvet NE, Rochefort NE, Vezia TI.

Mainly Western European species. Also reported from Czechoslovakia. According to BENTON (1975) *E. obliquus* and *E. jenkinsoni* may be the same species. However, detailed study of the series of both species from Rochefort shows some distinct differences in the male genitalia, the most obvious being a larger general size, and a more elongated epandrium in *E. jenkinsoni*. Also the very broad and deep median excavation in the base of the female ovipositor is specific for *E. jenkinsoni* and distinctly less outspoken in *E. obliquus* (as indicated in COE, 1966). They therefore seem to be two distinct species.

*Eudorylas obscurus* COE, 1966

1♂ 5♀♀, Rochefort NE, 1982 (MHNN)

The distribution of this species is poorly known. It is reported from most regions in Europe but records are rare.

*Eudorylas ruralis* (MEIGEN, 1824)

21 specimens from the following localities: Les Bayards NE, Couvet NE, Vezia TI (MHNN), Genève GE (MHNG)

Fairly common species but missing from Northern Europe.

*Eudorylas subfascipes* COLLIN, 1956

1♂, Burgdorf BE, 6.II.1971 (MHNG)

Uncommon species, distribution not well known but reported from several countries. In Central Europe only from Czechoslovakia.

*Eudorylas subterminalis* COLLIN, 1956

Couvet NE, 1♂, 3-6.VIII.1984; 1♂, 31.VIII-2.IX.1984; 1♀, 2-10.IX.1984; 1♂ 5♀♀, Vezia TI, 1979 (MHNN)

Very common species, previously often confused with *E. terminalis* but seems to be more common than the latter.

*Eudorylas zonatus* (ZETTERSTEDT, 1849)

8 specimens from the following localities: Le Landeron NE, Couvet NE, Rochefort NE, Vezia TI (MHNN)

Fairly common species, widely distributed over Europe.

*Dorylomorpha beckeri* (ACZEL, 1939)

1♀, Le Landeron NE, 22.IV.1982 (MHNN)

According to ALBRECHT (1990) a montane and predominantly boreal species. In Central Europe reported from Austria, Hungary and Czechoslovakia.

*Dorylomorpha platystylis* ALBRECHT, 1979

1♀, Le Cachot NE, 12.VI.1973 (MHNN)

Uncommon species. According to ALBRECHT (1990), a temperate-middle boreal, montane species. Reported in Central Europe from Austria and Czechoslovakia.

*Tomosvaryella cilitarsis* (STROBL, 1910)

1♂, Couvet NE, 3-6.VIII.1984; 1♂ 1♀, Il Fuorn GR, 18.VIII.1982 (MHNN)

A typical boreomontane species. Reported in Central Europe from Austria and Czechoslovakia.

*Tomosvaryella coquilletti* (KERTESZ, 1907)

1♂, Vezia TI, 1979 (MHNN)

*T. coquilletti* is restricted to Eastern and Central Europe. The female cannot be distinguished from *T. sylvatica*, but the male terminalia differ distinctly in shape. This seems to be the most western record of this species.

*Tomosvaryella geniculata* (MEIGEN, 1824)

8 specimens from the following localities: Couvet NE, Les Bayards NE, Vezia TI (MHNN)

A common species, widely distributed in Europe.

*Tomosvaryella kuthyi* (ACZEL, 1944)

1♀, Neuchâtel (Ermitage) NE, 9.VII.1990 (MHNN)

As *T. coquilletti* a mainly Eastern and Central European species, but also a few records from the Atlantic region.

*Tomosvaryella sylvatica* (MEIGEN, 1824)

104 specimens from the following localities: Le Locle NE, Couvet NE, Rochefort NE, Tête de Ran NE, Untervaz (Haselboden) GR, Flühli BE, Noirvaux VD, Vezia TI, Zernez GR (MHNN)

Most common species of this genus, widely and generally distributed over Europe.

PHENOLOGY

From the data of the two year cycles of Malaise trap catches, some preliminary results regarding seasonal occurrence and voltinism of Pipunculidae in Switzerland in comparison to other regions in Europe, can be extrapolated. The following species seem to have a unimodal occurrence throughout the year: *V. aucta*, *J. villosa*, *N. lapponicus*, *N. scutellatus*, *C. obtusinervis*, *C. vittipes* and *P. thomsoni*. This coincides with previous findings in Europe (DE MEYER & DE BRUYN, 1989, in press). As mentioned in DE MEYER & DE BRUYN (in press), some of the unimodal species show a tendency to have the peak period slightly earlier in Central Europe than in Western Europe. This seems also to be the case for *V. aucta* and *P. thomsoni* in Switzerland, although the

data are too limited to draw any definite conclusions. *N. scutellatus* on the other hand, occurs much later than previous findings (see GROOTAERT & DE MEYER, 1986).

Table 2: Records from Malaise trap catches at Vezia TI, in 1979. (♂ / ♀)

*C. aeneus*, *C. semifumosus*, *C. subultimus* and *E. fuscipes* also show a unimodal occurrence, although these species are usually bimodal in Western and Central Europe. Maybe the first peak period (usually at the end of June or beginning July for *Cephalops* species, and end of May for *E. fuscipes*) was not detected. This is also shown by the data for *C. ultimus* which has a bimodal occurrence in Vezia but with a very indistinct first period. Other clearly bimodal species are *P. campestris*, *T. sylvatica*, *E. obliquus* and may be also *E. ruralis*. Although the latter is shown to be bimodal, the peak periods are somewhat too close to each other to indicate two successive generations (from breeding experiments, it has been shown that the period between two generations is usually about 10 weeks). For the other bimodal species, the peak coincides well with similar temporal occurrence in Western Europe except that the peak periods for *T. sylvatica* are clearly much later than is usual the case for this species (see DE MEYER & DE BRUYN, 1989 for comparison). More annual cycles will be necessary in order to receive a clear idea regarding the temporal occurrence of Pipunculidae in Switzerland.

Table 3: Records from Malaise trap catches at Rochefort NE, in 1982. (♂ / ♀)

	13-16.V.82	17-19.V	20-24.V	25-27.V	28-30.V	31.V-2.VI	3-6.VI	7-9.VI	10-14.VI	15-17.VI	18-20.VI	21-23.VI	24-27.VI	28.VI-3.VII	4-11.VII	12-13.VII	14-16.VII	17-21.VII	22-26.VII	27.VII-1.VIII	2-5.VIII	6-9.VIII	10-12.VIII	13-15.VIII	16-18.VIII	19-22.VIII	23-25.VIII	26-29.VIII	30.VIII-1.X	2-5.IX	6-8.IX	9-12.IX	13-15.IX	16-19.IX	20-22.IX	23-26.IX	27-29.IX	30-3.X
<i>Chalarus juliae</i>																																						
<i>C. pughi</i>																																						
<i>C. spurius</i> (?)																																						
<i>Jassidophaga villosa</i>	1/	/1	/2		/1	/2			/2	1/																												
<i>Nephrocerus lapponicus</i>																																						
<i>N. scutellatus</i>																																						
<i>Pipunculus campestris</i>																																						
<i>P. spinipes</i>																																						
<i>P. thomsoni</i>																																						
<i>Cephalosphaera furcata</i>																																						
<i>Cephalops aeneus</i>																																						
<i>C. carinatus</i>	/1		/1	/3	/1		3/1																															
<i>C. obtusinervis</i>																																						
<i>C. semifumosus</i>																																						
<i>C. subultimus</i>																																						
<i>C. ultimus</i>																																						
<i>C. vittipes</i>																																						
<i>Eudorylas jenkinsoni</i>																																						
<i>E. kozaneki</i> sp.n.	/1		/1																																			
<i>E. obliquus</i>																																						
<i>E. obscurus</i>																																						
<i>E. zonatus</i>																																						

## CONCLUSIONS

As mentioned in the introduction, only 11 pipunculid species were previously reported for the Swiss fauna (see table 1). Identification of the above collections has resulted in one new species and an additional 38 species new to the fauna.

Several of these species are fairly common and widespread all over Europe, like *Pipunculus campestris*, *P. spinipes*, *Cephalosphaera furcata*, *Cephalops aeneus*, *C. semifumosus*, *Tomosvaryella sylvatica*, *T. geniculata*, *Eudorylas subterminalis* and *E. zonatus*. Other species are absent from Northern Europe but fairly generally distributed in Central Europe, like *Pipunculus zugmayeriae*, *Tomosvaryella kuthyi*, *Eudorylas obliquus* and *E. ruralis*. In addition, a few species like *Dorylomorpha platystylis* and *Tomosvaryella cilitarsis* have a presumably boreomontane distribution. This material included some interesting findings. For a more detailed discussion of the distribution of Pipunculidae in Europe, we refer to DE MEYER (1992).

With these additions, 50 species are reported from Switzerland. Compared to some neighbouring countries like Germany and Austria (from which more than 50 species are reported, see DE MEYER, 1992), we might still expect a few additions to the Swiss fauna if more material becomes available.

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## RÉSUMÉ

Quelques additions à la faune des Pipunculides de Suisse sont présentées, sur la base de collections de musées suisses, y compris deux séries de données annuelles obtenues au moyen de pièges Malaise. Une nouvelle espèce est décrite: *Eudorylas kozaneki* sp.n. Trente-sept autres espèces sont signalées

pour la première fois en Suisse. Ces adjonctions sont discutées brièvement et une liste provisoire des 50 espèces de Pipunculides connues de Suisse est présentée. Les données phénologiques sont comparées avec celles des autres régions européennes.

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