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# Contribution to the Pipunculidae fauna of Spain

(Diptera)

With 13 figures

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## Summary

This study is mainly based on material of Pipunculidae collected in two localities in Spain: Pina de Ebro (Zaragoza) and Moraira (Alicante). Eleven new species are described: *Eudorylas blascoi*, *E. dilatatus*, *E. falcifer*, *E. mediterraneus*, *E. monegrensis*, *E. tumidus*, *E. wahisi*, *Tomosvaryella hildeae*, *T. hispanica*, *T. resurgens*, and *T. sepulta*. An updated checklist for the Spanish pipunculid fauna is given and the phenology and zoogeographical affinities are shortly discussed.

## Zusammenfassung

Die Arbeit basiert insbesondere auf Aufsammlungen von Pipunculiden an zwei Lokalitäten in Spanien: Pina de Ebro (Zaragoza) und Moraira (Alicante). Elf neue Arten werden beschrieben: *Eudorylas blascoi*, *E. dilatatus*, *E. falcifer*, *E. mediterraneus*, *E. monegrensis*, *E. tumidus*, *E. wahisi*, *Tomosvaryella hildeae*, *T. hispanica*, *T. resurgens* und *T. sepulta*. Ein aktualisiertes Verzeichnis der Pipunculidenfauna Spaniens wird vorgelegt. Die Phänologie sowie die zoogeographischen Beziehungen werden kurz diskutiert.

## Acknowledgements

The author would like to thank Mr BLASCO-ZUMETA and Dr WAHIS who collected most of the material incorporated in this study. Also many thanks to Mr MICHAEL ACKLAND for allowing me to study some of his material and for his hospitality during my visit to Kidlington. Thanks to Drs S. KUZNETZOV and N. KUZNETZOVA for their assistance and hospitality during my visit to St Petersburg and to Dr MCGAVIN (University Museum, Oxford) for allowing me to study some of COLLIN's and VERRALL's material during my short visit. This study was partly financed through grants of NFWO (study visit to St Petersburg, ref. V 3/5-CS.D 8405) and Earthwatch Europe (visit to University Museum Oxford).

## Introduction

Pipunculidae are small inconspicuous flies closely related to hoverflies (Syrphidae). They can be differentiated from the latter by the large compound eyes, occupying most of the hemispherical head and by differences in the wing venation (see DE MEYER, 1989a). During their larval stage they are parasitoids of Auchenorrhyncha (Homoptera). Worldwide, about 1200 species are known.

During the last three decades, the European fauna has been studied relatively well, both in respect to faunal studies of specific countries or regions (for example, COE 1966, DE MEYER & DE BRUYN, 1985, KOZÁNEK, 1986) as well as revisions of certain taxa (ALBRECHT, 1990, DE MEYER, 1989a, JERVIS, 1992). The Mediterranean fauna was always under-represented in these studies (DE MEYER, 1992a). Mainly because the amount of material available for this region seems to be limited, but also because of the lack of regional taxonomists specialised in this group. However, recently some specific studies of the Mediterranean fauna have started: DE MEYER (1995) studied the Pipunculidae of Israel and the Sinai and KOZÁNEK & BELCARI recently revised Italian material (KOZÁNEK pers. comm., paper in preparation).

For the Iberian peninsula, records are still very limited and merely comprises sporadic mentions of material: COLLIN (1958), COE (1969), and more recently ALBRECHT (1990), KOZÁNEK (1993) and KUZNETZOV (1993). So far 20 species were reported from Spain. These are listed in table 1 with respective references. Also included in Table 1 are the new records from this study. The present study is mainly based on material put at the disposal of the author, from two different areas of Spain:

Material collected by Mr BLASCO-ZUMETA between 1989 and 1993 near Pina de Ebro, province of Zaragoza: an area known for its gypsiferous soils and associated vegetation. The material was collected by various means (coloured traps, Moericke traps and Malaise traps) in a vegetation dominated by *Juniperus thurifera*, *Pinus halepensis*, *Rosmarinus officinalis* and *Brachypodium retusum*. Sample numbers mentioned in the list of material examined from this locality refer to Mr ZUMETA's numbering system.

Material collected by Dr WAHIS between 1989 and 1990 at Moraira, province of Alicante by means of a Malaise trap, placed in a garrigue with a vegetation dominated by *Rosmarinus officinalis* and *Pinus halepensis*.

Some additional specimens were put at my disposal by Mr M. ACKLAND (Kidlington, UK) from his private collection (indicated by DMA). All material from both places including type material is conserved in alcohol and deposited in the collections of the Koninklijk Belgisch Instituut voor Natuurwetenschappen (KBIN) except indicated otherwise (paratypes of the newly described species are deposited in the Museo Nacional de Ciencias Naturales, Madrid (MNCN) if sufficient material was present, as indicated in the text).

In addition type material deposited in the following collections was studied:

- Oxford University Museum, Oxford U.K.
- Museum für Naturkunde der Humboldt-Universität, Berlin, Germany (it concerns here type material of BECKER's types at the moment on loan to Dr S. KUZNETZOV of the Zoological Institute St Petersburg, Russia and studied during a visit to this institute).

Species new to science are fully described and illustrated. For other species only a diagnostic description is given and a reference to a more extensive description when available.

## List of species

### Chalarinae

*Chalarus* WALKER, 1834

*Chalarus brevicaudis* JERVIS, 1992

**Diagnosis:** Female. Small bristly species, occiput narrow, ocellar bristles absent. Third antennal segment dark, obtuse. Frons very wide. Posterior row on mid femur well developed, posterior

row on front femur and anterior row on hind femur moderate developed. Pulvilli and claws short. Third costal section very long compared to fourth section (for full description and comparison with other European species, see JERVIS, 1992).

**Material examined:** SPAIN, Alicante, Moraira, 1♀, 2.-13.IV.1990

**Discussion:** *C. brevicaudis* was recently described by JERVIS (1992) based on material from different European countries, including Italy (Piedmont) and the French Pyreneans. It is easily differentiated from other *Chalarus* species by the shape of the ovipositor (piercer short and needle like, base broad and roundish). It seems to be widely distributed throughout Europe but nowhere common.

***Verrallia* MIK, 1899**

***Verrallia aucta* (FALLÉN, 1817)**

**Diagnosis:** Large bristly species, occiput narrow, ocellar bristles present. Third antennal segment dark, obtuse. Eyes not touching, frons narrowed in the middle. Legs dark, posterior rows on front and mid femora, and anterior row on hind femur well developed. Third costal section about as long as fourth section. Cross-vein *r-m* near middle of discal cell. Vein *MI+2* with appendix. Female, as male except for the following characters. Frons wider, almost with parallel sides. Third costal section shorter than fourth section. (For comparison with other European *Verrallia* species, see KUZNETZOV, 1992)

**Material examined:** SPAIN, Alicante, Moraira, 1♂ 6♀, 2.-13.IV.1990.

**Discussion:** *Verrallia aucta* is a very widespread species, found throughout Europe. Until recently it was the only known true *Verrallia* species for the region (i.e. not including *Jassidophaga*). KUZNETZOV (1992) recently described a second species, from Switzerland: *V. helvetica*.

**Pipunculinae**

**Cephalopsini**

***Cephalops* FALLÉN 1810**

***Cephalops conjunctivus* COLLIN, 1958**

**Diagnosis:** Third antennal segment short acute, yellow-brown. Humeri dark. Dorsocentral rows with multiple rows of well developed pale hairs. Legs mainly dark. Third costal section about three times as long as fourth section. Cross-vein *r-m* near basal fourth of discal cell. Abdomen elongated, first segment laterally with long pale hairs (for full redescription, see DE MEYER 1989a).

**Material examined:** SPAIN, Monegros, Zaragoza Prov., Pina de Ebro, Retuerta de Pina, 1♀, 12.VI.1990, Moericke trap between *Rosmarinus officinalis* and *Juniperus thurifera* (sample 1564); 1♂ 1♀, 7.VI.1991, plates between junipers and *R. officinalis* (sample 3221). Alicante, Moraira, 3♂♂ 2♀♀, 8.-13.X.1989; 22♂♂ 5♀♀, 14.-20.X.1989; 26♂♂ 9♀♀, 21.-27.X.1989; 8♂♂ 5♀♀, 28.X.-3.XI.1989; 2♂♂ 2♀♀, 4.-10.XI.1989.

**Discussion:** *C. conjunctivus* was originally described from the former Yugoslavia and is otherwise only reported from Spain (DE MEYER, 1992a) and Israel (DE MEYER, 1995). It can be differentiated from other European *Cephalops* species by the combination of the above mentioned diagnostic characters. It is related to the Afrotropical *obtusus* group (see DE MEYER, 1992b).

*Cephalops varius* (CRESSON, 1911)

**Diagnosis:** Third antennal segment acute, yellow-brown. Humeri dark. Legs predominantly yellow; femora with median black ring incomplete, last tarsal segment brown. Third costal section about as long as fourth section. Cross-vein *r-m* near middle of discal cell (for full redescription, see DE MEYER, 1989b).

**Material examined:** SPAIN, Monegros, Zaragoza Prov., Pina de Ebro, Retuerta de Pina, 1♂, 11.XI.1990, Moericke trap (sample 2393).

**Discussion:** This species is widespread in the Nearctic region but was not reported from the Palaearctic region. However during the last years, the author has encountered a few specimens from different European localities who belong here. External morphology and male genital structure is identical to the material studied from the Nearctic region and redescribed in DE MEYER (1989b). In addition to the above specimen from Spain, I have seen specimens from Germany (Mötzlich, Halle; see DE MEYER & STARK, 1992), and Switzerland (Entomologische Sammlung, ETH Zentrum, Zürich; courtesy of Dr B. MERZ).

**Eudorylini***Eudorylas* ACZÉL, 1940*Eudorylas blascoi* sp. n.

(figs 1, 13a)

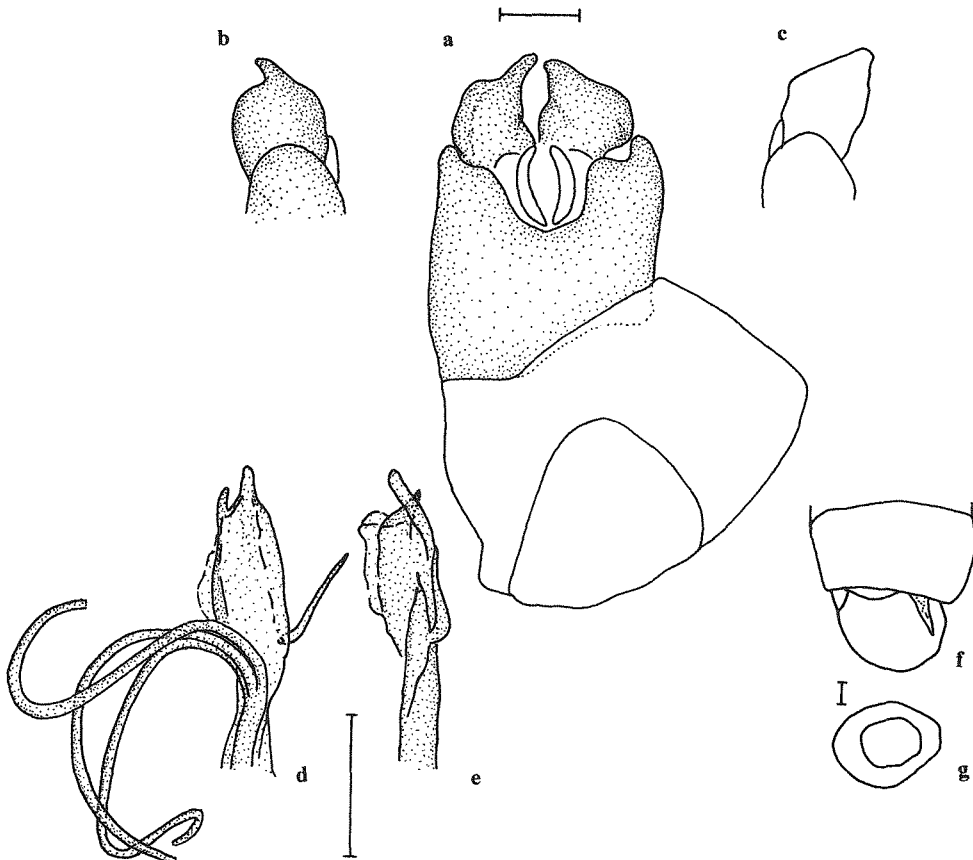
**Description:** Male. Third antennal segment brown, acute. Frons, eyes touching for distance equal to three times ocellar triangle. Face silver-grey pubescent. Thorax. Humeri yellow-brown, paler in colour than centre mesonotum. Mesonotum and scutellum weakly subshining black, mainly greyish brown dusted. Wing. Third costal section about as long as fourth section. Cross-vein *r-m* near basal third of discal cell. Legs. Femora dark at base. Knees with basal fifth of tibia yellow; coloration variable, sometimes tibiae mainly yellow and only slightly darkened in the middle. Tarsal segments yellow-brown, last tarsal segment darker. Abdomen. Lateral fan with 4-5 dark bristles. Abdominal terga weakly subshining brown, greyish brown dusted. Sterna brown. Postabdomen Fig. 1. Female, as male except for the following characters. Frons completely dusted though less densely in front of ocellar triangle. Third antennal segment longer acuminate and paler. Legs usually paler than in male specimens. Pulvilli and claws long, almost as long as last four tarsal segments. Postabdomen Fig. 13a.

**Material examined:** ♂ holotype, 4 ♂♂ 1♀ paratypes: SPAIN, Monegros, Zaragoza Prov., Pina de Ebro, Retuerta de Pina, 25.IV.1991, coloured plates betw. junipers and *R. officinalis* (sample 2972) (female paratype designated as allotype). Paratypes, same locality as holotype, 1♂, 22.IV.1990, blue and yellow colour plates, betw. *Rosmarinus officinalis* and *Juniperus thurifera* (sample 1385); 2♂♂, 29.IV.1990, idem sample 1385 (sample 1413); 1♀, 2.VI.1990, Moericke trap betw. *R. officinalis* and *J. thurifera* (sample 1507); 1♂, 12.VI.1990, idem sample 1507 (sample 1564); 1♂ 1♀, 6.VII.1990, coloured plates betw. *R. officinalis* and *Pinus halepensis*, (sample 1690); 1♂ 1♀, 11.VII.1990, Moericke trap betw. *J. thurifera* and *Brachypodium retusum* (sample 1729); 1♀, 12.X.1990, collected at night with light trap (sample 2252); 1♂, 25.IV.1991, Moericke trap (sample 2937); 2♂♂, 7.V.1991, Moericke trap (sample 3037); 4♂♂ 1♀, 7.V.1991, coloured plates betw. *R. officinalis* and *P. halepensis* (sample 3049); 1♂ 2♀♀,

20.V.1991, Moericke trap (sample 3115); 1♀, 7.VI.1991, Malaise trap (sample 3296); 2♀♀, 20.VI.1991, Malaise trap (sample 3545); 1♀, 20.IX.1991, coloured plates betw. junipers and *B. retusum* (sample 3964); 1♀, 23.IX.1991, Malaise trap (sample 4012); 1♀, 10.XI.1991, coloured plates betw. *B. retusum* (sample 4161). Alicante, Moraira, 4♂♂, 2.-7.X.1989; 1♂, 8.-13.X.1989.

**Etymology:** This species is named in honour of Mr BLASCO-ZUMETA who collected the material at Pina de Ebro.

**Discussion:** *E. blascoi* sp. n. forms together with *E. fluviatilis* and the newly described *E. wahisi* a species complex. The males of all three species can be differentiated from each other by the shape of the surstyli and the lateral hook on the apical part of the aedeagus (cfr Figs 1,4 & 8). In addition *E. blascoi* can be differentiated from *E. wahisi* by the smaller epandrium and the generally paler colour. All type material deposited in collections of KBIN except 4 paratypes in MNCN.



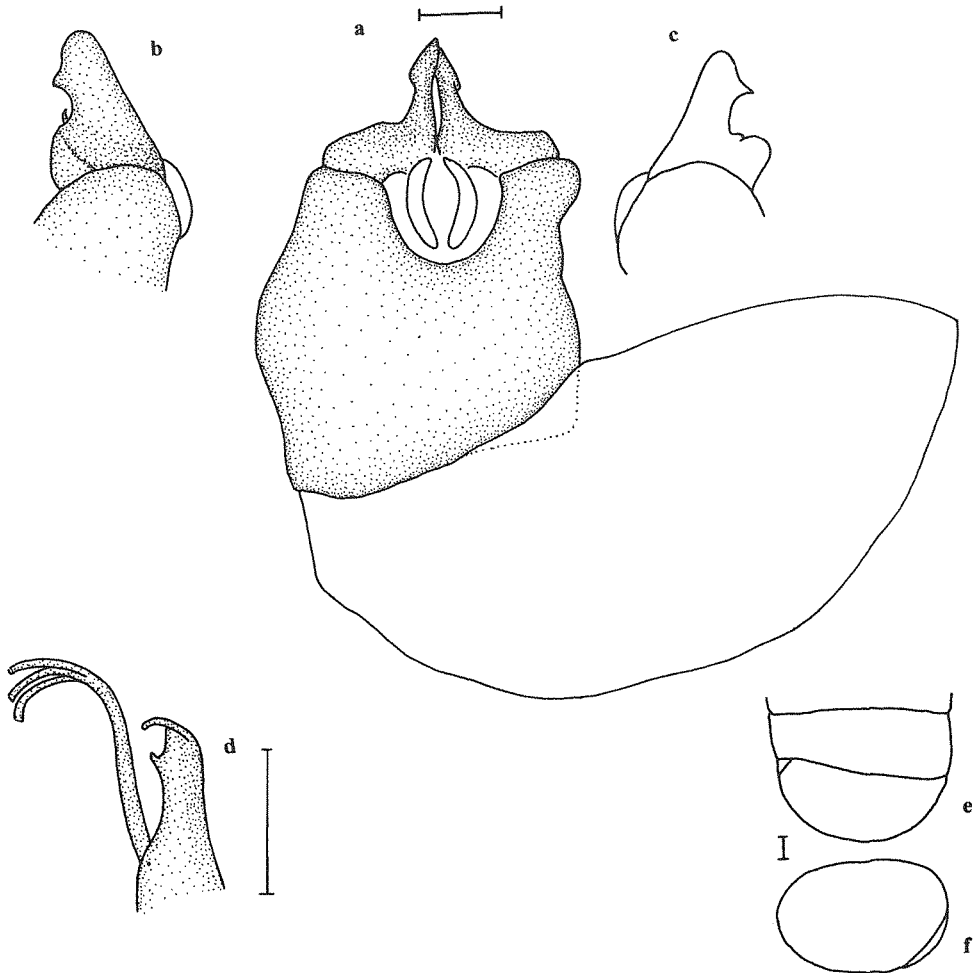
**Fig. 1:** Male terminalia *Eudorylas blascoi* sp. n.: a: dorsal view, b: outer surstylus, lateral view, c: inner surstylus, lateral view, d: apical part aedeagus and ejaculatory ductuli, ventral view, e: apical part aedeagus, lateral view, f: abdominal tergum 5 and sternum 8, dorsal view, g: sternum 8, distal view (scale 0.1 mm).

*Eudorylas dilatatus* sp. n.

(figs 2, 13b)

**Description:** Male. Third antennal segment dark brown with whitish tip, acuminate. Frons, eyes touching for distance equal to two times ocellar triangle. Face silver-grey pubescent.

Thorax. Humeri yellow-brown, paler in colour than centre mesonotum. Mesonotum and scutellum subshining black, mainly greyish-brown dusted. Wing. Third costal section about as long as fourth section. Cross-vein r-m near basal third of discal cell. Legs. Femora dark at base. Knees with basal fifth to fourth of tibia yellow, sometimes tibia dorsally more extensively yellowish.



**Fig. 2:** Male terminalia *Eudorylas dilatatus* sp. n.: a: dorsal view, b: outer surstylus, lateral view, c: inner surstylus, lateral view, d: apical part aedeagus and ejaculatory ductuli, lateral view, e: abdominal tergum 5 and sternum 8, dorsal view, f: sternum 8, distal view (scale 0.1 mm).

Tarsal segments yellow-brown, last tarsal segment darker. Abdomen. Lateral fan with 3-4 dark bristles. Abdominal terga subshining black-brown, brownish dusted. Sterna brown. Postabdomen Fig. 2. Female, as male except for the following characters. Third antennal segment longer acuminate. Frons with supraantennal knob (sometimes not strongly developed); lower part silver-grey dusted till just above knob, upper part shining black. Pulvilli and claws about as long as last tarsal segment. Mesonotum mainly brownish dusted. Postabdomen Fig. 13b.

**Material examined:** ♂ holotype, 9♂♂ 4♀♀ paratypes: SPAIN, Alicante, Moraira, 2.-13.IV.1990 (one female paratype designated as allotype). Paratypes, same locality as holotype, 1♂, 21.-24.IX.1989; 1♂, 25.-30.IX.1989; 3♂♂ 6♀♀, 2.-7.X.1989; 3♂♂ 1♀, 8.-13.X.1989; 1♂, 14.-20.X.1989; 1♂, 12.-18.II.1990; 9♂♂, 26.II-5.III.1990; 10♂♂ 1♀, 12.-20.III.1990. Monegros, Zaragoza Prov., Pina de Ebro, Retuerta de Pina, 2♂♂, 29.IV.1990, coloured plates betw. *Rosmarinus officinalis* and *Juniperus thurifera* (sample 1413); 1♂, 5.V.1990, idem as sample 1413 (sample 1432); 1♂, 2.VI.1990, Moericke trap betw. *R. officinalis* and *J. thurifera* (sample 1507); 1♀, 6.VII.1990, coloured plates betw. *R. officinalis* and *Pinus halepensis* (sample 1690); 1♀, 16.IX.1990, coloured plates in a zone with salt (sample 2096); 1♂ 3 ♀♀, 18.IX.1990, Malaise trap (sample 2106); 1♂, 11.XI.1990, Malaise trap (sample 2419); 1♂, 7.V.1991, plates betw. *R. officinalis* and *P. halepensis* (sample 3049); 1♀, 7.V.1991, Malaise trap (sample 3060); 1♂ 2♀♀, 20.V.1991, Moericke trap (sample 3115); 5♂♂ 4♀♀, 7.VI.1991, plates between junipers and *R. officinalis* (sample 3221); 1♂ 2♀♀, 24.V.1991, Malaise trap (sample 3236); 1♂ 1♀, 7.VI.1991, Malaise trap (sample 3296); 1♀, 10.IX.1991, Malaise trap (sample 3912); 1♂, 20.IX.1991, plates between junipers and *Brachypodium retusum* (sample 3964); 1♀, 23.IX.1991, Malaise trap (sample 4012).

**Etymology:** Refers to the enlarged male postabdomen.

**Discussion:** As discussed in DE MEYER (1995), *E. ruralis* seems to be a complex of species all recognised by the enlarged abdominal sternum eight, the lack of a membraneous area, and typical shape of surstyli. Besides *E. ruralis*, two new species were recognised from Israel and the Sinai desert: *E. imitator* and *E. sinaiensis*. *E. dilatatus* sp. n. also belongs to this group. The male abdominal eight sternum is evenly rounded apically as in the above mentioned newly described species. The shape of the surstyli closely resembles those of *E. ruralis* except that a subapical ventral tooth is present on both surstyli in stead of only the inner. The female ovipositor has a distinct concave excavation at its base as in *E. ruralis* and *E. imitator*. All type material deposited in collections of KBIN except 4 paratypes in MNCN.

### *Eudorylas falcifer* sp. n.

(fig. 3)

**Description:** Male. Third antennal segment yellow-brown with whitish fringe anteriorly, long acuminate. Frons, eyes touching for distance equal to 2.5 times ocellar triangle. Face silver-grey pubescent. Thorax. Humeri yellow-brown, only slightly paler in colour than centre mesonotum. Mesonotum and scutellum weakly subshining black, mainly greyish brown dusted. Wing. Third costal section slightly longer than fourth section. Cross-vein *r-m* near basal third of discal cell. Legs. Femora narrowly yellow at base. Tibia yellow, only darkened in apical part (especially hind tibia). Tarsal segments yellow-brown. Abdomen. Lateral fan with 3-4 dark bristles. Abdominal terga weakly subshining black-brown, brownish dusted. Sterna brown. Postabdomen Fig. 3. Female unknown.

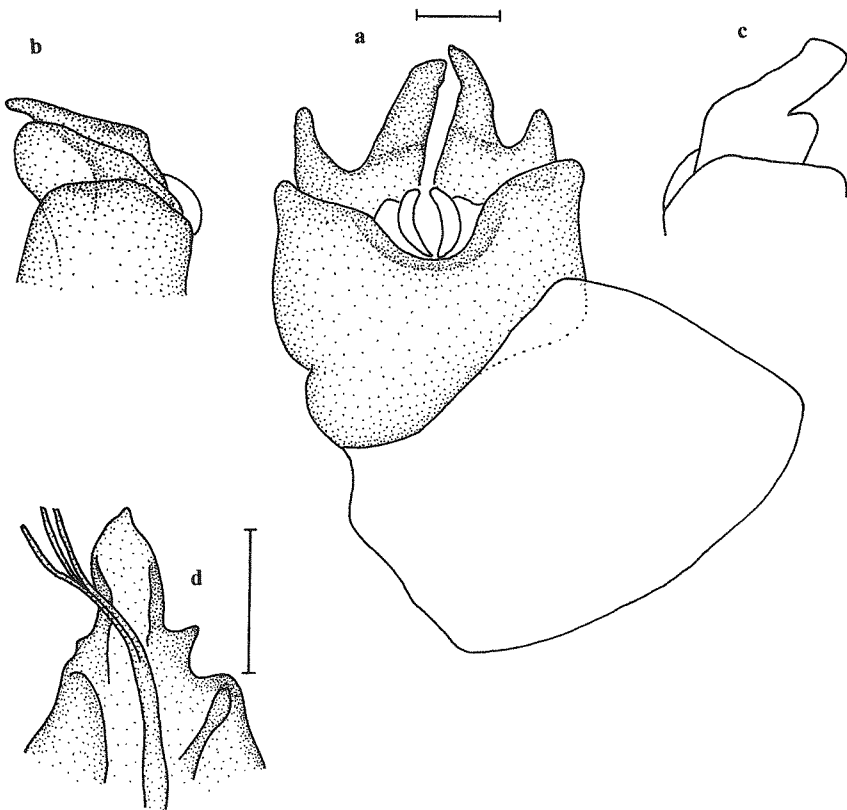


Fig. 3: Male terminalia *Eudorylas falcifer* sp. n.: a: dorsal view, b: outer surstylus, lateral view, c: inner surstylus, lateral view, d: apical part aedeagus and ejaculatory ductuli, ventral view (scale 0.1 mm).

**Material examined:** ♂ holotype: SPAIN, Monegros, Zaragoza Prov., Pina de Ebro, Retuerta de Pina, 25.IV.1991, plates between junipers and *Rosmarinus officinalis* (sample 2972).

**Etymology:** From the Latin 'falcifer', meaning carrying a scythe. This refers to the scythe shaped surstyli of the male genitalia.

**Discussion:** This species does not seem to be related to any other known European species. The male abdominal sternum eight lacks a membraneous area but is not enlarged (as is the case in species of the *E. ruralis* complex). The surstyli are subsymmetrical and have a typical shape with a broad base that is on both ends strongly extended, producing the typical curved and scythe like shape. This occurs in other species like *E. arcanus* COE, *E. jenkinsoni* COE or *E. fascipes* (ZETTERSTEDT) but only in the outer surstylus, not both. Holotype deposited in collections of KBIN.



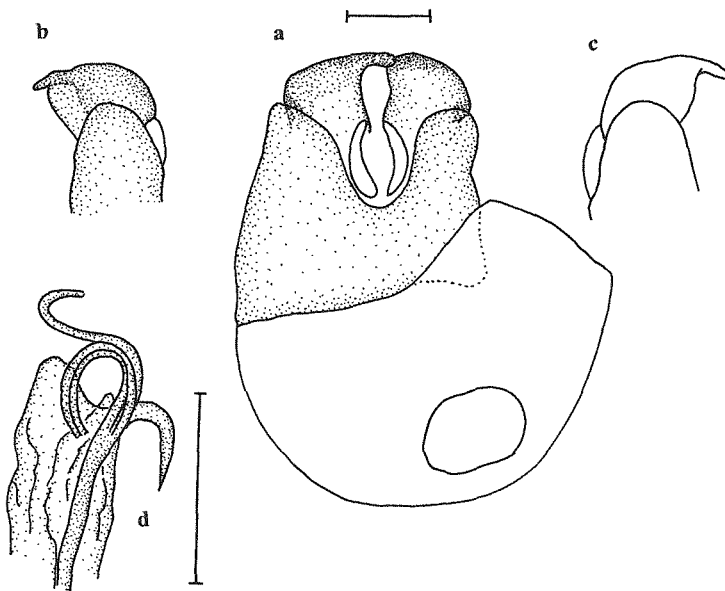
*Eudorylas fluviatilis* (BECKER, 1900)

(fig. 4)

**Description:** Male. Third antennal segment brown, acute. Frons, eyes touching for distance equal to three times ocellar triangle. Face silver-grey pubescent. Thorax. Humeri yellowish, paler in colour than centre mesonotum. Mesonotum and scutellum weakly subshining black, mainly greyish brown dusted. Wing. Third costal section about as long as fourth section. Cross-vein *r-m* near basal two-fifths of discal cell. Legs. Femora dark at base (hind femur in syntypes narrowly yellow but not distinctly so); knees yellow. Tibia yellow, darkened in the middle. Tarsal segments yellowish, last tarsal segment darker. Abdomen. Lateral fan with 3-6 dark bristles. Abdominal terga weakly subshining brown, greyish brown dusted. Sterna brown. Postabdomen Fig. 4. Female, as male except for the following characters. Frons completely dusted though less densely in front of ocellar triangle. Third antennal segment longer acuminate and yellowish. Legs usually paler than in male specimens. Pulvilli and claws long, almost as long as last four tarsal segments.

**Material examined:** 2♂♂ and 1♀ syntypes: EGYPT, Assiut (Nr 44397, on two pins, MNHU). Other material: SPAIN, Monegros, Zaragoza Prov., Pina de Ebro, Retuerta de Pina, 2♂♂, 11.VII.1990, Moericke trap betw. *Juniperus thurifera* and *Brachypodium retusum* (sample 1729); 2♂♂, 8.VII. 1991, coloured plates between *Onopordum nervosum* (sample 3504).

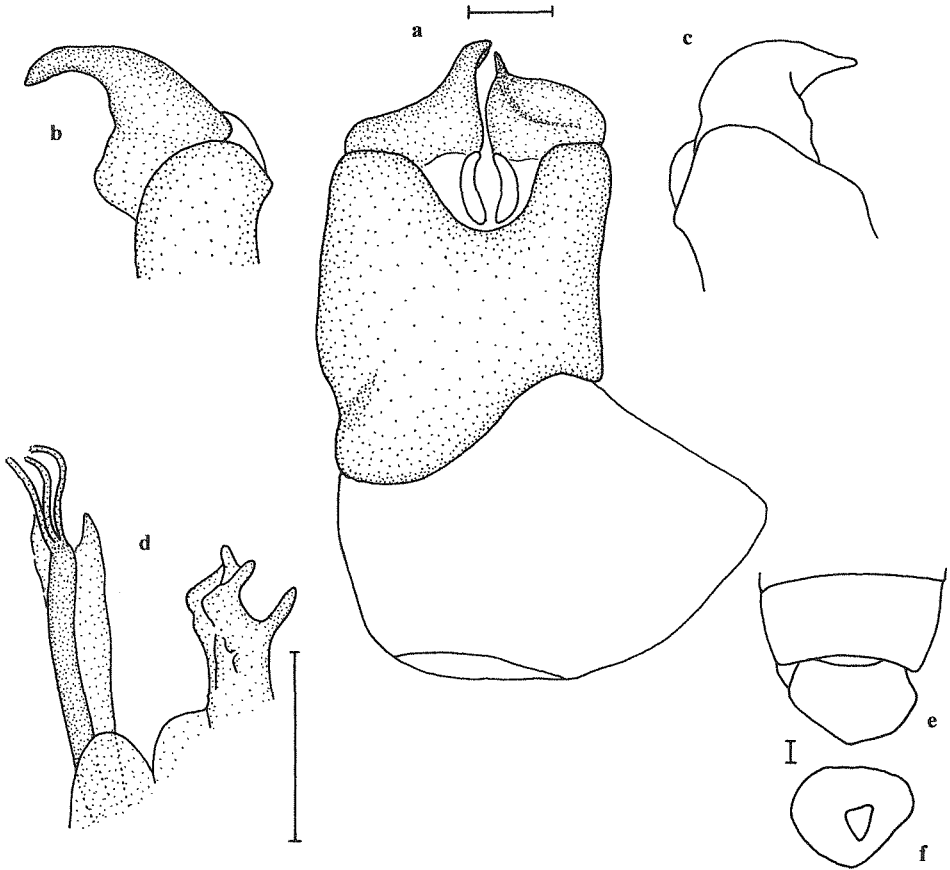
**Discussion:** As mentioned above, *E. fluviatilis* forms together with the two newly described species *E. blascoi* and *E. wahisi* a species complex. Male specimens of the former can be differentiated from the two latter species by the smaller and roundish membraneous area on abdominal sternum 8 and the differences in surstyli and apical part of aedeagus (with lateral hook turned downwards, cfr. Figs 1, 4 & 8). Male genitalia of the Spanish material was compared with one of the male syntypes of *E. fluviatilis* and proved to be conspecific.



**Fig. 4:** Male terminalia *Eudorylas fluviatilis*: a: dorsal view, b: outer surstylus, lateral view, c: inner surstylus, lateral view, d: apical part aedeagus and ejaculatory ductuli, ventral view (scale 0.1 mm).

*Eudorylas inferus* COLLIN, 1956

**Diagnosis:** Male. Third antennal segment yellow-brown, acute. Thorax. Humeri dark, same color as centre mesonotum. Mesonotum and scutellum subshining black, brownish dusted. Wing. Third costal section shorter than fourth section. Cross-vein *r-m* near basal third till fourth of discal cell. Legs. Femora dark at base. Knees with basal third of tibia yellow. Abdomen. Lateral fan with 4-5 dark bristles. Abdominal terga weakly subshining black-brown, brownish dusted.



**Fig. 5:** Male terminalia *Eudorylas mediterraneus* sp. n.: a: dorsal view, b: outer surstylus, lateral view, c: inner surstylus, lateral view, d: apical part aedeagus and ejaculatory ductuli, lateral view, e: abdominal tergum 5 and sternum 8, dorsal view, f: sternum 8, distal view (scale 0.1 mm).

**Material examined:** SPAIN, Monegros, Zaragoza Prov., Pina de Ebro, Retuerta de Pina, 1♂, 9.IV.1991, Moericke trap (sample 2893).

**Discussion:** One male specimen was found in the material studied that apparently belongs to this species. The shape of the male genitalia corresponds to drawings provided by Mr M. ACKLAND

which were based on a male syntype (Barton Mills, 26.VI.1935) from the type series present in the VERRALL-COLLIN collection of the Oxford University Museum (see PONT, 1995). It is an uncommon species reported mainly from West and Central Europe and Italy.

*Eudorylas mediterraneus* DE MEYER & ACKLAND sp. n.

(figs 5, 13c)

**Description:** Male. Third antennal segment yellow-brown, long acuminate. Frons, eyes touching for distance equal to three to four times ocellar triangle; lower fifth silver-grey. Face silver-grey pubescent. Thorax. Humeri yellow, paler than centre mesonotum. Mesonotum and scutellum mainly brownish dusted. Halter yellow-brown. Wing. Third costal section slightly shorter than fourth section. Cross-vein *r-m* near basal fourth of discal cell. Legs. Femora narrowly yellow at base. Tibiae and tarsal segments yellow, last tarsal segment darker. Abdomen. Lateral fan with few dark bristles. Abdominal terga subshining black-brown, brownish dusted, laterally more greyish dusted. Sterna brown. Postabdomen Fig. 5. Female, as male except for the following characters. Third antennal segment filiform. Frons with lower half silver-grey, upper half gradually more shining black towards ocellar triangle. Postabdomen Fig. 13c.

**Material examined:** ♂ holotype, 4♂♂ 2♀♀ paratypes: CRETE, Georgioupolis, 7.V.1986, Ackland (DMA) (one female paratype designated as allotype). Paratypes, SPAIN, Alicante, Moraira, 1♂, 12.-20.III.1990; 1♂, 2.-13.IV.1990.

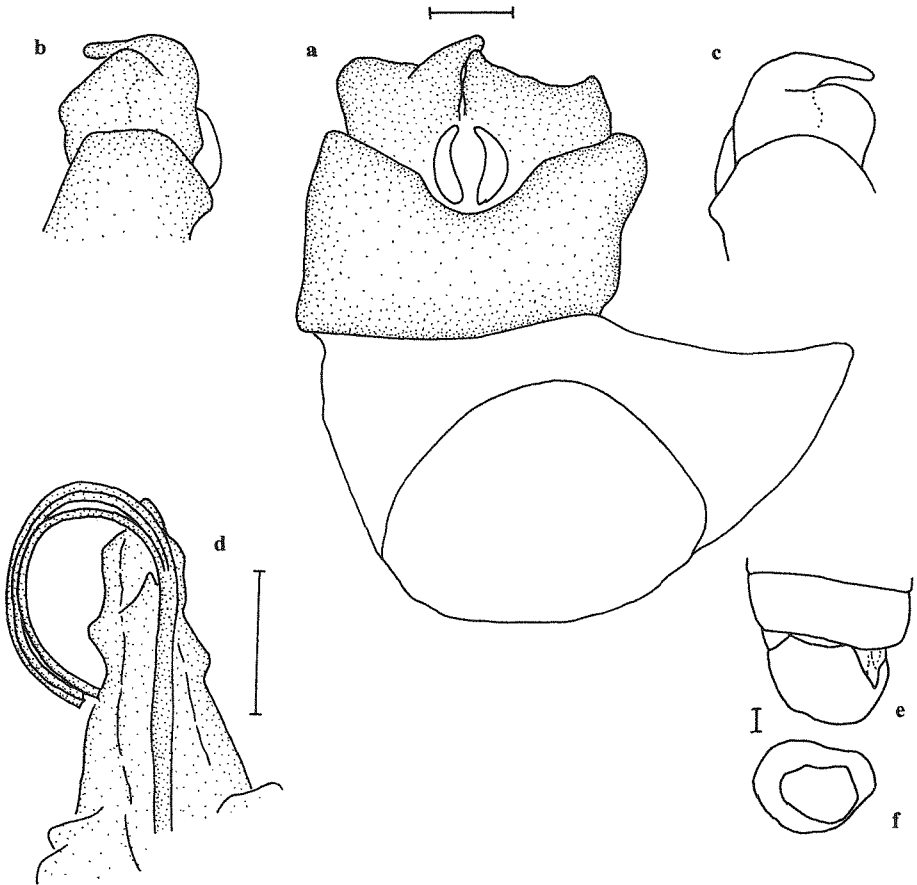
**Etymology:** Named after the Mediterranean region and hereby referring to the two widely separated mediterranean localities where the type material of this species is found.

**Discussion:** Material from this species was independently recognised by Mr ACKLAND and myself as belonging to a new species and is therefore jointly described here. It belongs to the *Eudorylas* group with yellow humeri and hind femora yellow at base. It seems to be related to *E. obliquus* because of a similar shape of surstyli, and short ejaculatory ductuli. The apical part of the aedeagus has however a different shape. Holotype and 2 paratypes deposited in the collections of the Natural History Museum, London. Remaining type material in KBIN.

*Eudorylas monegrensensis* sp. n.

(figs 6, 13d)

**Description:** Male. Third antennal segment dark brown, acute. Frons, eyes touching for distance equal to three times ocellar triangle. Face silver-grey pubescent. Thorax. Humeri dark, same colour as centre mesonotum. Mesonotum and scutellum subshining black, dark greyish brown dusted. Halter brownish. Wing. Third costal section slightly longer than half the length of fourth section. Cross-vein *r-m* near basal third of discal cell. Legs. Femora dark at base. Knees with basal fifth of tibia yellow-brown. Front four tibiae without distinct apical spurs. Tarsal segments yellow-brown, last tarsal segment darker. Abdomen. Lateral fan with 3 dark bristles. Abdominal terga subshining black-brown, brownish dusted. Sterna brown. Postabdomen Fig. 6. Female, as male except for the following characters. Frons with small supraantennal knob; upper part shining black for distance equal to three times ocellar triangle; lower part dusted. Apical spurs present but very short, hardly longer more distinct than other tibial bristles. Pulvilli and claws very long, about 2-3 times as long as last tarsal segment. Postabdomen Fig. 13d.



**Fig. 6:** Male terminalia *Eudorylas monegrensensis* sp. n.: **a:** dorsal view, **b:** outer surstylus, lateral view, **c:** inner surstylus, lateral view, **d:** apical part aedeagus and ejaculatory ductuli, ventral view, **e:** abdominal tergum 5 and sternum 8, dorsal view, **f:** sternum 8, distal view (scale 0.1 mm).

**Material examined:** ♂ holotype, 1♀ paratype: SPAIN, Monegros, Zaragoza Prov., Pina de Ebro, Retuerta de Pina, 24.V.1991, Malaise trap (sample 3236) (female paratype designated as allotype). Paratypes, same locality as holotype, 2♂♂, 7.VI.1991, plates between junipers and *Rosmarinus officinalis* (sample 3221).

**Etymology:** Named after the region of Monegros in Spain where the type material was collected.

**Discussion:** This species does not seem to be related to any of the known European species. The inner surstylus shows the typical scythe shape. The absence of distinct apical spurs is only found in two other European species: *E. halteratus* and *E. melanostolus* (cfr COE, 1966) but it does not seem to be related to these. All type material deposited in collections of KBIN except 1 paratype in MNCN.

*Eudorylas obliquus* COE, 1966

**Diagnosis:** Male. Third antennal segment brown, with whitish tip, acuminate. Thorax. Humeri yellow, lighter than centre mesonotum. Mesonotum and scutellum subshining black, dark greyish brown dusted. Wing. Third costal section about 1.5 times as long as fourth section. Cross-vein *r-m* near basal third of discal cell. Legs. Femora yellow at base. Tibiae yellow, sometimes only slightly darkened in the middle. Tarsal segments yellowish, last tarsal segment darker. Abdominal terga subshining black-brown, brownish dusted. Female, as male except for the following characters. Frons completely greyish pubescent except for very narrow mediolongitudinal line. Third costal section only slightly longer than fourth.

**Material examined:** SPAIN, Alicante, Moraira, 2♀♀, 14.-20.X.1989; 1♂, 27.X-3.XI.1989; 1♂, 4.-10.XI.1989; 1♂, 3.-9.XII.1989; 5♂♂ 2♀♀, 12.-20.III.1990; 8♂♂ 7♀♀, 2.-13.IV.1990.

**Discussion:** *E. obliquus* is a fairly widespread species reported mainly from western and southern European countries. It is closely related to *E. jenkinsoni* (see DE MEYER, 1993a) and the newly described *E. mediterraneus*. It was also relatively common in material studied from Israel (DE MEYER, 1995).

*Eudorylas obscurus* COE, 1966

**Diagnosis:** Male. Third antennal segment yellowish brown, acute. Thorax. Humeri yellow, lighter than centre mesonotum. Mesonotum and scutellum subshining black, dark greyish brown dusted. Wing. Third costal section almost twice as long as fourth section. Cross-vein *r-m* near basal third of discal cell. Legs. Femora dark at base. Tibiae yellow, darkened in the middle (darkening variable), usually at least for more than half of entire length. Tarsal segments yellowish, last tarsal segment darker. Abdominal terga subshining black-brown, brownish dusted. Female, as male except for the following characters. Third antennal segment acuminate. Frons mainly greyish pubescent except just in front of ocellar triangle and along small medio-longitudinal line. Tibiae generally more yellowish.

**Material examined:** SPAIN, Alicante, Moraira, 1♂ 1♀, 21.-27.X.1989; 1♂ 1♀, 4.-10.XI.1989; 1♂ 1♀, 11.-19.XI.1989; 4♂♂ 1♀, 20.-27.XI.1989; 5♂♂ 1♀, 28.XI-2.XII.1989; 3♀♀, 3.-9.XII.1989; 8♂♂, 1.-7.I.1990; 2♂♂ 1♀, 10.-21.I.1990; 3♂♂ 1♀, 29.I.1990; 1♂ 2♀♀, 26.II-5.III.1990; 14♂♂ 2♀♀, 12.-20.III.1990; 19♂♂ 5♀♀, 2.-13.IV.1990.

**Discussion:** *E. obscurus* is a fairly common species widely distributed in West and Central Europe and apparently somewhat related to *E. arcanaus* COE. From the Mediterranean region, it is only recorded from Italy.

*Eudorylas setosus* (BECKER, 1908)

**Diagnosis:** Third antennal segment brown, long acuminate. Thorax. Humeri yellow, lighter than centre mesonotum. Mesonotum brownish dusted, anterior margin narrowly greyish. Scutellum with conspicuous long dark bristles along apical margin. Third costal section twice as long as fourth section. Cross-vein *r-m* at basal third of discal cell. Legs. Femora dark at base. Tibiae mainly yellow except in centre darkened. Abdominal terga subshining black, brownish dusted.

**Material examined:** 5 syntypes, CANARY ISLANDS, (MNHU, under Nrs 46844, 47081 (2 specimens), 51360 and 51462. On loan to ZISP). Other material: SPAIN, Granada, 2♂♂, 7.V.1987, Ackland (DMA).

**Discussion:** The species was originally described from the Canary islands. Recently the author had the opportunity to study the type material and to establish the identity of the species. This is the first record from the European mainland. Material from Israel, earlier mentioned by DE MEYER (1995) proved not to be conspecific. The conspicuous apical row of scutellar bristles is present in both species and the shape of the female ovipositor is identical. The shape of the male genitalia is however different from the true *E. setosus*. The Israeli material therefore seems to belong to an hitherto undescribed species.

*Eudorylas terminalis* (THOMSON, 1870)

**Diagnosis:** Male. Third antennal segment yellow-brown, acute. Thorax. Humeri yellow, lighter than centre mesonotum. Mesonotum and scutellum subshining black, dark greyish brown dusted. Third costal section about 1.5 times as long as fourth section. Cross-vein *r-m* near basal third of discal cell. Legs. Femora dark at base except hind femur narrowly yellow at base. Tibiae yellow, sometimes only slightly darkened in the middle. Tarsal segments yellowish, last tarsal segment darker. Abdominal terga subshining black-brown, brownish dusted. Female, as male except for the following characters. Frons completely greyish pubescent except for very narrow mediolongitudinal line in upper half.

**Material examined:** SPAIN, Alicante, Moraira, 1♀, 8.-13.X.1989; 2♂♂ 3♀♀, 14.-20.X.1989; 1♂ 1♀, 21.-27.X.1989; 5♀♀, 27.X-3.XI.1989; 2♂♂ 1♀, 4.-10.XI.1989; 1♂ 1♀, 11.-19.XI.1989; 3♂♂, 12.-20.III.1990; 3♂♂, 2.-13.IV.1990.

**Discussion:** A widespread but uncommon species, reported from several European countries except for extreme northern part. Some European records however need reconfirmation because of confusion with *E. subterminalis*.

*Eudorylas tumidus* sp. n.

(fig. 7)

**Description:** Male. Third antennal segment yellow-brown, long acuminate. Frons, eyes touching for distance equal to three times ocellar triangle. Face silver-grey pubescent. Thorax. Humeri yellow, paler in colour than centre mesonotum. Mesonotum and scutellum subshining black, brownish dusted. Wing. Third costal section about as long as fourth section. Cross-vein *r-m* near basal third of discal cell. Legs. Femora dark at base. Knees yellow. Tibia dorsally yellow, ventrally darkened at apical two-third. Tarsal segments palish, last tarsal segment darker. Abdomen. Lateral fan with 3-4 dark bristles. Abdominal terga subshining black-brown, brownish dusted. Sterna brown. Postabdomen Fig. 7. Female unknown.

**Material examined:** ♂ holotype: SPAIN, Monegros, Zaragoza Prov., Pina de Ebro, Retuerta de Pina, 6.VII.1990, coloured plates betw. *Rosmarinus officinalis* and *Pinus halepensis* (sample 1690).

**Etymology:** Refers to the swollen or enlarged male postabdomen.

**Discussion:** This species also belongs to the *E. ruralis* species complex. It shows the same enlarged abdominal sternum eight (although with a relatively small membraneous area in this case) and enlarged ejaculatory apodema. The apical part of the aedeagus is simple and slender and the surstyli are somewhat pointed apically. In these respects it is similar to *E. sinaiensis* DE MEYER, to which it seems to be most closely related within the species complex. Holotype deposited in collections of KBIN.

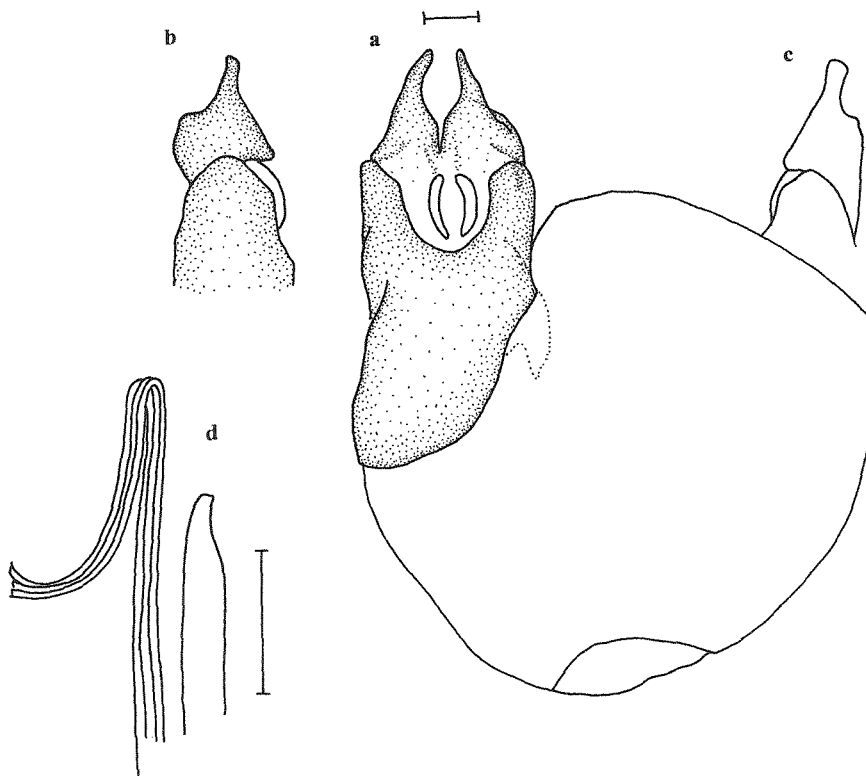
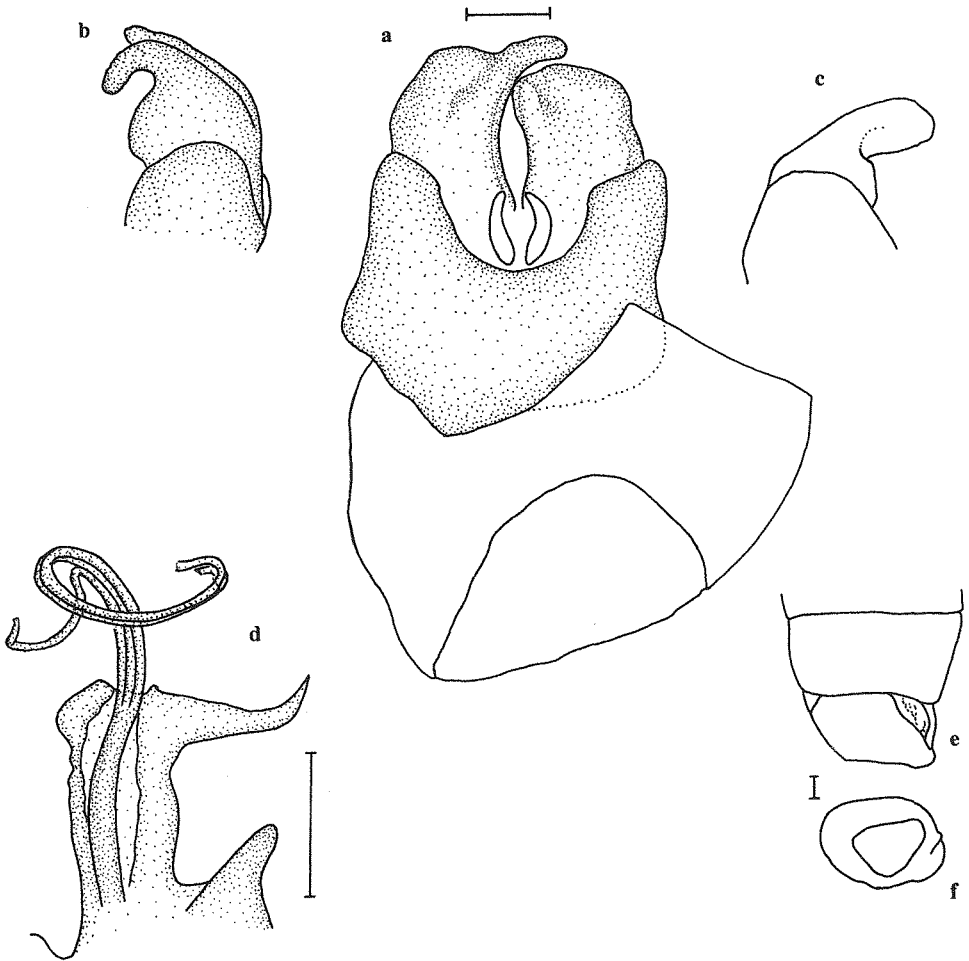


Fig. 7: Male terminalia *Eudorylas tumidus* sp. n.: a: dorsal view, b: outer surstylus, lateral view, c: inner surstylus, lateral view, d: apical part aedeagus and ejaculatory ductuli, lateral view (scale 0.1 mm).

*Eudorylas wahisi* sp. n.

(figs 8, 13e)

**Description:** Male. Third antennal segment dark brown, long acute. Frons, eyes touching for distance equal to three times ocellar triangle. Face silver-grey pubescent. Thorax. Humeri yellow-brown, paler in colour than centre mesonotum. Mesonotum and scutellum weakly subshining black, mainly greyish brown dusted. Wing. Third costal section about as long as fourth section. Cross-vein *r-m* near basal third of discal cell. Legs. Femora dark at base. Knees narrowly with at most basal fifth of tibia yellow. Tarsal segments yellow-brown, last tarsal segment darker. Abdomen. Lateral fan with 2-3 dark bristles. Abdominal terga weakly subshining brown, greyish brown dusted. Sterna brown. Postabdomen Fig. 8. Female, as male except for the following characters. Frons shining in front of ocellar triangle for distance equal to triangle, otherwise dusted. Third antennal segment paler, more yellow-brown. Legs with tibiae somewhat more yellowish in basal part. Pulvilli and claws very long, at least as long as last four tarsal segments. Postabdomen Fig. 13e.



**Fig. 8:** Male terminalia *Eudorylas wahisi* sp. n.: **a:** dorsal view, **b:** outer surstylus, lateral view, **c:** inner surstylus, lateral view, **d:** apical part aedeagus and ejaculatory ductuli, ventral view, **e:** abdominal tergum 5 and sternum 8, dorsal view, **f:** sternum 8, distal view (scale 0.1 mm).

**Material examined:** ♂ holotype, 11♂♂ 7♀♀ paratypes: SPAIN, Alicante, Moraira, 2.-7.X. 1989 (one female paratype designated as allotype). Paratypes, same locality as holotype, 5♂♂ 3♀♀, 21.-24.IX.1989; 4♂♂, 25.-30.IX.1989; 3♂♂ 3♀♀, 8.-13.X.1989; 2♂♂ 1♀, 14.-20.X. 1989; 1♀, 29.I.1990; 1♀, 5.-11.II.1990; 7♂♂, 26.II-5.III.1990; 2♂♂ 2♀♀, 12.-20.III.1990; 4♂♂ 1♀, 2.-13.IV.1990. Monegros, Zaragoza Prov., Pina de Ebro, Retuerta de Pina, 1♀, 6.VII.1990, coloured plates betw. *Rosmarinus officinalis* and *Pinus halepensis* (sample 1690); 1♂, 25.III.1991, Malaise trap (sample 2844); 1♂, 9.IV.1991, Malaise trap (sample 2925); 1♀, 25.IV.1991, Moericke trap (sample 2937); 4♂♂ 2♀♀, 7.V.1991, Malaise trap (sample 3060); 1♂ 24.V.1991, Malaise trap (sample 3236).



**Etymology:** This species is named in honour of Dr WAHIS who collected the material at Moraira.

**Discussion:** The general appearance is more robust and darker than in *E. fluviatilis* and *E. blascoi*. In the male, the epandrium is broader and apical appendage of the outer surstylus is thicker; also the shape of the lateral hook on the apical part of the aedeagus is different (cfr Figs 1,4 & 8). In the female, the base of the piercer has a distinct protuberance which is absent in *E. fluviatilis* and *E. blascoi*. This species also seems to be closely related to *E. unicolor* (ZETTERSTEDT), a widespread species in Europe (DE MEYER, 1992a). It also shows the same characteristics (dark species, apical appendage of outer surstylus thick) but the humeri are dark (same colour as centre mesonotum) and the lateral appendage of the aedeagus is much shorter than in *E. wahisi*. All type material deposited in collections of KBIN except 4 paratypes in MNCN.

### Tomosvaryellini

#### *Dorylomorpha* ACZÉL, 1939

#### *Dorylomorpha incognita* (VERRALL, 1901)

**Diagnosis:** Third antennal segment long acute, brown with whitish tip. Humeri dark. Legs dark; knees with basal third of tibiae yellow. Third costal section very short. Cross-vein *r-m* near basal fourth of discal cell (for full redescription, see ALBRECHT, 1990).

**Material examined:** SPAIN, Monegros, Zaragoza Prov., Pina de Ebro, Retuerta de Pina, 1♂, 20.V.1991, Moericke trap (sample 3115); 1♂, 7.VI.1991, plates between junipers and *Rosmarinus officinalis* (sample 3221).

**Discussion:** This is a Palaearctic species, widespread throughout Europe. ALBRECHT (1990) describes its distribution as temperate-Northern Boreal, montane. For the Mediterranean region, it is reported from the former Yugoslavia.

#### *Tomosvaryella* ACZÉL, 1939

#### *Tomosvaryella argyratoides* DE MEYER, 1995

**Diagnosis:** Male. Third antennal segment brownish, acuminate. Face silver-grey pubescent. Occiput with conspicuous silver-grey collar anteriorly. Thorax. Humeri whitish. Mesonotum and scutellum subshining black; greyish dusted, anterior margin. In front of scutellum and anterior margin of scutellum more densely silvery dusted. Wing. Fourth costal section three times longer than third section. Legs dark; knees narrowly yellow. Abdominal terga subshining black; greyish dusted, terga 1-2 densely silvery dusted, tergum 3 less so. Female, as male except for the following characters. Frons; upper half shining black. Abdominal tergum 6 with silver-grey lateral patches (for full description see DE MEYER, 1995).

**Material examined:** SPAIN, Monegros, Zaragoza Prov., Pina de Ebro, Retuerta de Pina, 2♂♂ 1♀, 20.VI.1991, Malaise trap (sample 3545); 1♂, 20.VI.1991, coloured plates in salt zone (sample 3364).

**Discussion:** This species was recently described by DE MEYER (1995) from Israel. It belongs to the *argyrata* group recognised by conspicuous silvery patches on occiput, thorax and/or abdomen, and simply shaped surstyli. One additional male specimen with slightly more slender surstyli was found in Pina de Ebro (7.VIII.1991, Malaise trap, sample 3751). Since it concerns here a single male we prefer to include it in this series for the time being.

*Tomosvaryella cilitarsis* (STROBL, 1910)

**Diagnosis:** Third antennal segment brown, long acuminate. Mesonotum subshining black, brownish dusting; dorsocentral rows well developed with dark hairs, especially anteriorly. Legs with knees very narrowly yellow; hind femur with double ventral row of longer hairs in apical third till half; hind tibia curved; hind tarsi with conspicuous erected hairs. Abdomen mainly shining black-brown; lightly brownish dusted; with dispersed but conspicuous dark pilosity.

**Material examined:** SPAIN, Monegros, Zaragoza Prov., Pina de Ebro, Retuerta de Pina, 2♂♂, 29.IV.1990, coloured plates betw. *Rosmarinus officinalis* and *Juniperus thurifera* (sample 1413); 2♂♂, 24.V.1991, Malaise trap (sample 3236); 1♀, 20.XII.1991, Moericke trap (sample 4250); 7♂♂ 1♀, 25.XII.1991, plates betw. junipers and *R. officinalis* (sample 4277); 1♂, 14.XI.1992, sweeping *Brachypodium retusum* (sample 5387); 1♂, 11.X.1992 (sample 5300); 1♀, 14.X.1992, (sample 5324); 2♂♂, 24.X.1992 (sample 5351); 1♂, 20.XI.1992 (sample 5405) all sweeping *Artemisia herba-alba*. Alicante, Moraira, 1♀, 21.-27.X.1989; 4♂♂ 1♀, 26.II-5.III.1990; 1♀, 12.-20.III.1990; 1♂, 2.-13.IV.1990.

**Discussion:** This is an uncommon species, mainly reported from northern and Central Europe and was considered to be mainly a boreomontane species (LAUTERER, 1981; DE MEYER, 1992a). However, these findings in Spain do not correspond to the pattern.

*Tomosvaryella docta* DE MEYER, 1995

**Diagnosis:** Third antennal segment yellow-brown, acuminate. Mesonotum mainly subshining black-brown, greyish dusting along margins, and anterior margin of scutellum. Legs with knees and basal third of tibia yellow. Tarsal segments yellow except last tarsal segment dark. Abdomen shining black-brown; tergum 1 and lateral margins greyish dusted, terga 2-3 viewed obliquely with silvery shine (for full description, see DE MEYER, 1995).

**Material examined:** SPAIN, Monegros, Zaragoza Prov., Pina de Ebro, Retuerta de Pina, 1♂, 25.VII.1991, Malaise trap (sample 3702); 1♂, 22.VIII.1991, plates on salt zone (sample 3767).

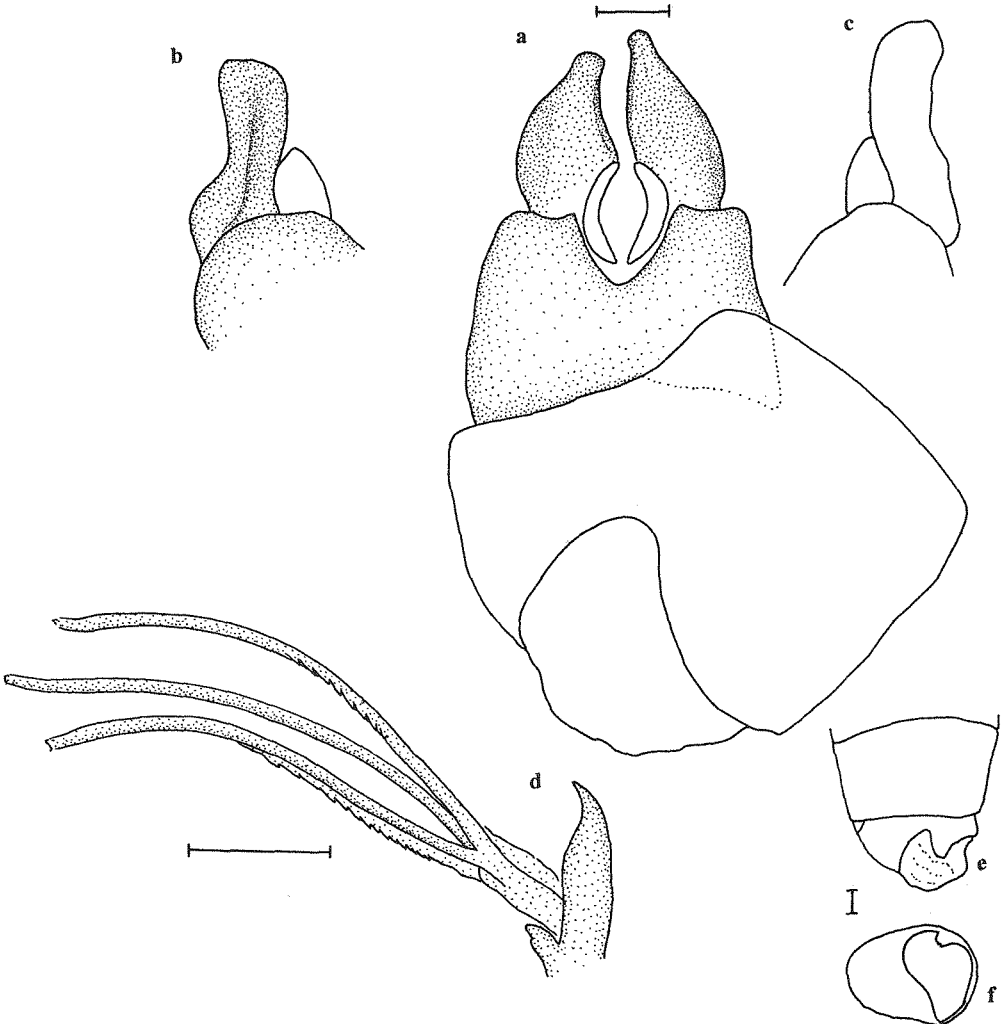
**Discussion:** This is a species recently described by DE MEYER (1995) from the Sinai Peninsula and Israel. For a more detailed discussion and description see there.

*Tomosvaryella freidbergi* DE MEYER, 1995

**Diagnosis:** Third antennal segment acuminate; dark brown. Legs dark with knees only narrowly yellow, hind femur with posteroventral row of longer hairs, at most as long as width of femur. Abdomen subshining black-brown; brownish dusted, lateral margins greyish. Male abdominal sternum 8 shorter than 5th tergum and with small membranous area. Female with piercer not reaching first abdominal tergum (for full description, see DE MEYER, 1995).

**Material examined:** SPAIN, Monegros, Zaragoza Prov., Pina de Ebro, Retuerta de Pina, 2♂♂ 1♀ (sample 1637); 1♂ 22.IV.1990, coloured plates betw. *Rosmarinus officinalis* and *Juniperus thurifera* (sample 1385); 1♂ 29.IV.1990, coloured plates betw. *R. officinalis* and *J. thurifera* (sample 1413); 1♂ 16.IX.1990, coloured plates in a zone with salt (sample 2096); 1♂ 12.X.1990, light trap (sample 2252); 1♂ 9.IV.1991, Malaise trap (sample 2925); 2♂♂ 4♀♀ 7.VI.1991, plates between junipers and *R. officinalis* (sample 3221); 1♂ 7.VI.1991, Malaise trap (sample 3296); 1♂ 2♀♀ 10.IX.1991, Malaise trap (sample 3912).

**Discussion:** As outlined in DE MEYER (1995) *T. kuthyi* and *T. freidbergi* belong to a species complex, characterised by the shape of surstyli (elongated with parallel sides and more or less curved inwards apically), and often posteroventral row of longer hairs on hind femur. In the above mentioned study of the Israeli and Sinai desert fauna some additional new species were described: *T. israelensis*, and *T. parakuthyi*. In the material studied here one further species of this complex could be differentiated based on differences in male genitalia: *T. hispanica*.



**Fig. 9:** Male terminalia *Tomosvaryella hildeae* sp. n.: a: dorsal view, b: outer surstylus, lateral view, c: inner surstylus, lateral view, d: apical part aedeagus and ejaculatory ductuli, lateral view, e: abdominal tergum 5 and sternum 8, dorsal view, f: sternum 8, distal view (scale 0.1 mm).

*Tomosvaryella hildeae* sp. n.

(figs 9, 13f)

**Description:** Male. Third antennal segment brownish with whitish tip, long acuminate. Frons, eyes touching for distance equal ocellar triangle; lower half silver-grey pubescent. Face silver-grey pubescent. Occiput lower half greyish dusted, upper part more shining black, weakly greyish brown dusted. Thorax. Humeri whitish yellow. Mesonotum and scutellum subshining black; greyish brown dusted. Halter yellowish. Dorsocentral hairs short and darkish. Wing. Fourth costal section three times longer than third section. Cross-vein *r-m* at middle of discal cell. Legs dark; knees with basal fifth of tibiae yellow. Front femora without basal spines. Abdomen. Lateral fan with 5-6 dark bristles. Abdominal terga subshining brownish; weakly greyish brown dusted, terga 1-2 more densely greyish dusted. All terga with short dispersed and darkish hairs. Sterna brown. Postabdomen Fig. 9. Female as male except for the following characters. Frons shining black, only silver-grey pubescent in lower third. Pulvilli and claws about as long as last tarsal segment. Postabdomen Fig. 13f.

**Etymology:** This species is named in honour of my wife HILDE, for her encouragement in my work.

**Material examined:** ♂ holotype, 2♂♂ 3♀♀ paratypes: SPAIN, Alicante, Moraira, 2.-13.IV.1990 (one female paratype designated as allotype). Paratypes, same locality as holotype, 1♀, 21.-24.IX.1989; 1♀, 12.-20.III.1990. Monegros, Zaragoza Prov., Pina de Ebro, Retuerta de Pina, 2♂♂, 9.IV.1991, Malaise trap (sample 2925); 1♂, 20.IV.1991, Malaise trap (sample 2951); 1♀ 25.VII.1991, Malaise trap (sample 3702).

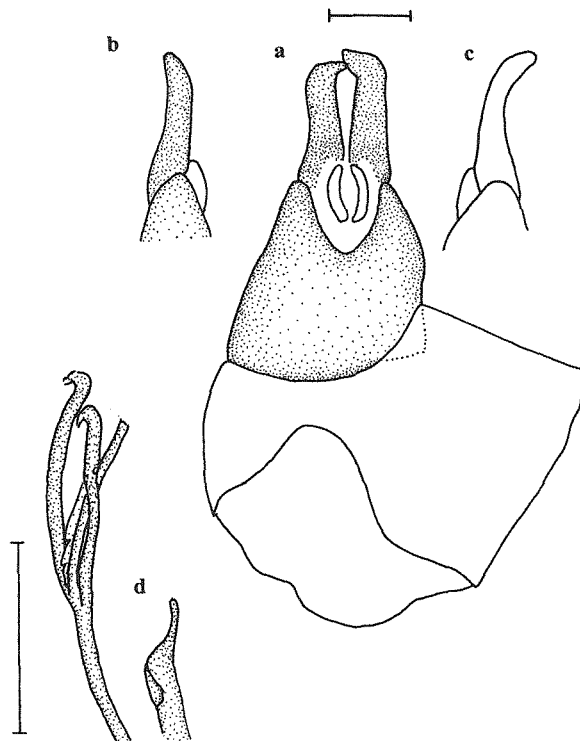
**Discussion:** The relationship of this new species to other *Tomosvaryella* species is not clear. It has the long and dentated ejaculatory ductuli in common with Afrotropical species like *T. latitarsis* and *T. mesostena* (see DE MEYER, 1993b) but the shape of the surstyli is completely different. All type material deposited in collections of KBIN except 2 paratypes in MNCN.

*Tomosvaryella hispanica* sp. n.

(figs 10, 13g)

**Description:** Male. Third antennal segment yellow-brown, acuminate. Frons, eyes touching for distance equal to ocellar triangle; lower half silver-grey pubescent. Face silver-grey pubescent. Occiput subshining black-brown greyish brown, in upper part more shining. Thorax. Humeri yellow. Mesonotum and scutellum subshining black-brown; weakly greyish brown dusted. Halter yellowish white. Dorsocentral hairs poorly developed posteriorly, few short pale hairs, anteriorly somewhat longer. Wing. Fourth costal section 3-4 times longer than third section. Cross-vein *r-m* at middle of discal cell. Legs dark; knees with basal fifth to sixth of tibiae yellow. Front femur with pair of basal spines, though very weakly developed and hardly distinct; hind femur with posteroventral row of longer palish hairs. Tarsal segments yellow to yellowish brown, hind tarsal segments darker. Hind trochanter smooth. Abdomen. Lateral fan poorly developed with 2-3 palish bristles. Abdominal terga subshining black; weakly greyish brown dusted. All terga with short dispersed and darkish hairs. Sterna brown. Postabdomen Fig. 10. Female, as male except for the following characters. Frons completely greyish dusted. Fourth costal section shorter, 2-3 times as long as third section. Basal spines on front (2) and mid (1) femora well developed; posteroventral row on hind femur missing. Pulvilli and claws about 1.5 times as long as last tarsal segment. Postabdomen Fig. 13g.

**Etymology:** Named after the country of the type locality, Spain.



**Fig. 10:** Male terminalia *Tomosvaryella hispanica* sp. n.: a: dorsal view, b: outer surstylus, lateral view, c: inner surstylus, lateral view, d: apical part aedeagus and ejaculatory ductuli, lateral view (scale 0.1 mm).

**Material examined:** ♂ holotype, 6♂♂ 9♀♀ paratypes: SPAIN, Monegros, Zaragoza Prov., Pina de Ebro, Retuerta de Pina, 25.VII. 1991, Malaise trap (sample 3702) (one female paratype designated as allotype). Paratypes, same locality as holotype, 2♂♂ 1♀ 11.VII.1990, Moericke trap betw. *Juniperus thurifera* and *Brachypodium retusum* (sample 1729); 4♂♂ 4♀♀ 18.IX. 1990, Malaise trap (sample 2106); 1♂ 20.IV.1991, Malaise trap (sample 2951); 7♂♂ 8♀♀ 20.VI.1991, Malaise trap (sample 3545); 2♂♂ 8♀♀ 6.VII.1991, Malaise trap (sample 3648); 6♂♂ 3♀♀ 7.VIII.1991, Malaise trap (sample 3751); 8♂♂ 6♀♀ 25.VIII. 1991, Malaise trap (sample 3791).

**Discussion:** This species belongs to the *kuthyi* species complex (see above) but can be differentiated from other members of the group by the thickened surstyli with are distinctly hooked apically. In this respect, it seems to be more closely related to *T. parakuthyi* than to any of the other species within the *kuthyi* complex. All type material deposited in collections of KBIN except 4 paratypes in MNCN.

#### *Tomosvaryella kuthyi* ACZÉL, 1944

**Diagnosis:** Third antennal segment acuminate; dark brown. Legs dark with knees only narrowly yellow, hind femur with posteroventral row of long hairs, at least as long as width of femur. Abdomen subshining black, brownish dusted, lateral margins more densely greyish especially terga 4 and 5. Male abdominal sternum 8 about as long as 5th tergum and with large membranous area. Female with piercer reaching first abdominal tergum.

**Material examined:** SPAIN, Monegros, Zaragoza Prov., Pina de Ebro, Retuerta de Pina, 1♀, 18.IX.1990, Malaise trap (sample 2106); 1♂ 25.IV.1991, Moericke trap (sample 2937); 6♂♂ 3♀♀, 7.VI.1991, Malaise trap (sample 3296); 3♀♀, 20.VI.1991, Malaise trap (sample 3545). Alicante, 2♀♀, Moraira, 25.-30.IX.1989; 3♂♂, 2.-7.X.1989; 3♂♂, 26.II-5.III.1990; 1♂, 2.-13.IV.1990.

**Discussion:** The relationship of *T. kuthyi* is discussed above. This is the only species of the complex with a wider distribution. It has been reported from a number of countries in western and Central Europe (DE MEYER, 1992a).

***Tomosvaryella resurgens* sp. n.**

(figs 11, 13h)

**Description:** Male. Third antennal segment yellow-brown, acuminate. Frons, eyes touching for distance equal to 1.5 times ocellar triangle; lower two-fifth silver-grey pubescent. Face silver-grey pubescent. Occiput lower two-third silver-grey pubescent; in upper part more greyish brown. Thorax. Humeri yellow. Mesonotum and scutellum mainly subshining black-brown; greyish brown dusted, anteriorly more greyish. Halter yellowish white.

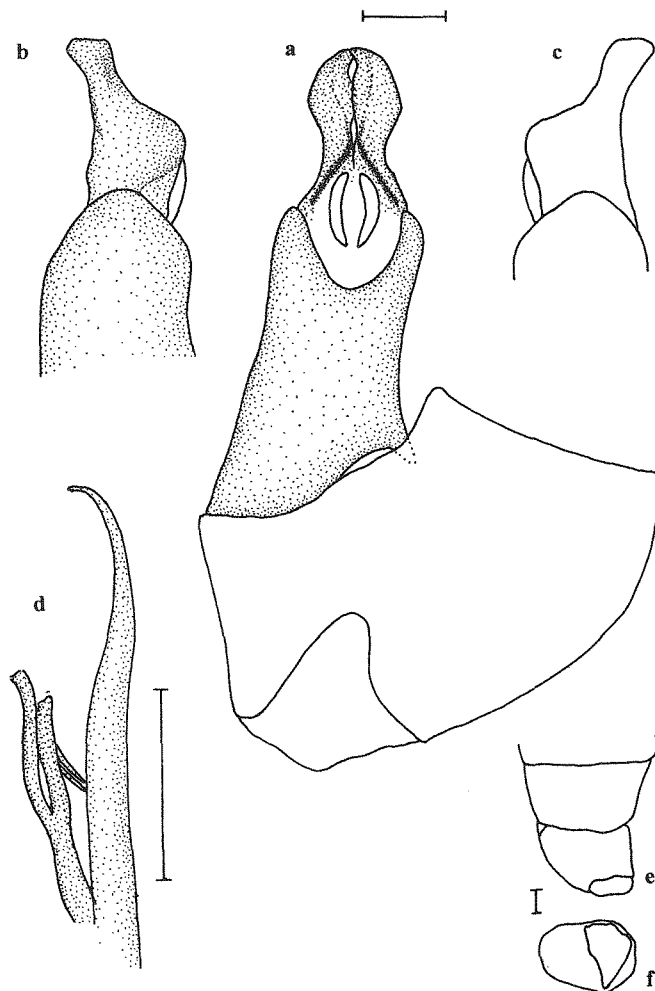
Dorsocentral hairs short pale hairs, anteriorly longer. Wing. Fourth costal section 1.5 - 2 times longer than third section. Cross-vein *r-m* at middle of discal cell. Legs dark; knees with basal third of tibiae yellow. Front femora without basal spines. Tarsal segments yellow, hind tarsal segments flattened and broadened. Hind trochanter with pointed processus with short dispersed hairs. Abdomen. Lateral fan with 5-7 palish bristles. Abdominal terga subshining black; greyish brown dusted, lateral margins more greyish. All terga with short dispersed and darkish hairs. Sterna brown. Postabdomen Fig. 11. Female, as male except for the following characters. Third antennal segment longer acuminate. Frons completely greyish dusted. Hind tarsal segments broader; front femur with basal spines; hind trochanter not pointed. Pulvilli and claws at least twice as long as last tarsal segment. Postabdomen Fig. 13h.

**Etymology:** From the Latin 'resurgo' meaning to appear again. This is an allusion to the seasonal difference with the closely related species *T. sepulta* sp. n. (see discussion below).

**Material examined:** ♂ holotype, 10♂♂ 10♀♀ paratypes: SPAIN, Alicante, Moraira, 2.-7.X.1989 (one female paratype designated as allotype). Paratypes, same locality as holotype, 4♂♂ 4♀♀, 21.-24.IX.1989; 13♂♂ 2♀♀, 25.-30.IX.1989; 10♂♂ 1♀, 8.-13.X.1989; 11♂♂, 14.-20.X.1989; 8♂♂, 21.-27.X.1989; 1♀, 27.X.-3.XI.1989; 1♀, 4.-10.X.1989; 1♂, 12.-20.III.1990; 2♂♂, 2.-13.IV.1990. Monegros, Zaragoza Prov., Pina de Ebro, Retuerta de Pina, 1♂, 6.VII.1990, coloured plates betw. *Rosmarinus officinalis* and *Pinus halepensis* (sample 1690); 1♀, 2.VIII.1990, coloured plates betw. *R. officinalis* and *Juniperus thurifera* (sample 1903); 1♂, 18.IX.1990, Malaise trap (sample 2106); 1♂, 7.V.1991, plates betw. *R. officinalis* and *P. halepensis* (sample 3049); 2♂♂, 25.VII.1991, Malaise trap (sample 3702); 1♂, 9.IX.1991, Malaise trap (sample 3880); 1♂ 1♀, 10.IX.1991, Malaise trap (sample 3912); 1♂ 1♀, 23.IX.1991, Malaise trap (sample 4012); 6♂♂ 1♀, 20.VII.1993, light trap (sample 5759); 1♂, 20.VIII.1993, light trap (sample 5927).

**Discussion:** *T. resurgens* and *T. sepulta* (see below) are closely related species, both characterised by the broadened hind tarsal segments and the general shape of the surstyli. *T. resurgens* differ from *T. sepulta* in the following characters: generally paler appearance; tarsal segments more yellow and at least basal fourth of tibia yellow; hind trochanters pointed. Also the shape

of male terminalia is different (compare figs 11 and 12). Besides the morphological differences, there is also clear phenological difference between the two species with *T. resurgens* predominantly occurring in the latter part of the year (mainly from September till November) with only a few specimens occurring in the first part of the year. *T. sepulta* shows the opposite seasonal pattern. The etymology of both names is a reference to this temporal difference. Both are related to *T. minima* and *T. rondanii* based on general structure of male terminalia. All type material deposited in collections of KBIN except 4 paratypes in MNCN.



**Fig. 11:** Male terminalia *Tomosvaryella resurgens* sp. n.: **a:** dorsal view, **b:** outer surstylus, lateral view, **c:** inner surstylus, lateral view, **d:** apical part aedeagus and ejaculatory ductuli, lateral view, **e:** abdominal tergum 5 and sternum 8, dorsal view, **f:** sternum 8, distal view (scale 0.1 mm).

*Tomosvaryella rondanii* (BECKER, 1898)

**Diagnosis:** Third antennal segment yellow-brown, acuminate. Frons, eyes touching for distance equal to ocellar triangle. Humeri yellow. Mesonotum greyish brown dusted, along anterior fourth more densely greyish; hairs along anterior margin pale. Third costal section about half as long as fourth costal section. Legs dark, knees with basal fifth of tibiae yellow. Tarsal segments brownish-yellow, hind tarsal segments not distinctly broadened. Abdomen subshining black-brown; brown dusted, laterally more greyish. A recent redescription was published by KUZNETZOV (1994).

**Material examined:** SPAIN, Monegros, Zaragoza Prov., Pina de Ebro, Retuerta de Pina, 1♂, 8.VII.1991, plates betw. *Onopordum nervosum* (sample 3504).

**Discussion:** This single specimen was found among a series of *T. sepulta* sp. n. (see below). *T. rondanii* was an obscure species for which the identity was not clearly established. The name was suggested as a new name by COLLIN (1945) for a specimen in BIGOT's collection (probably from Italy) and earlier considered to be *T. littoralis* by VERRALL but wrongly so. The author recently had the opportunity to study the type species (deposited in Oxford University Museum but momentarily on loan to Dr KUZNETZOV at Zoological Institute, St Petersburg) and to establish the identity. It resembles *T. sepulta* but can be differentiated by the hind tarsal segments not being thickened and the more greyish dusting on mesonotum in anterior part. From the general external morphology and the male genital structure, it is clear that *T. rondanii* is very closely related to *T. minima* and could be conspecific. The type specimen of the latter however seems to be lost.

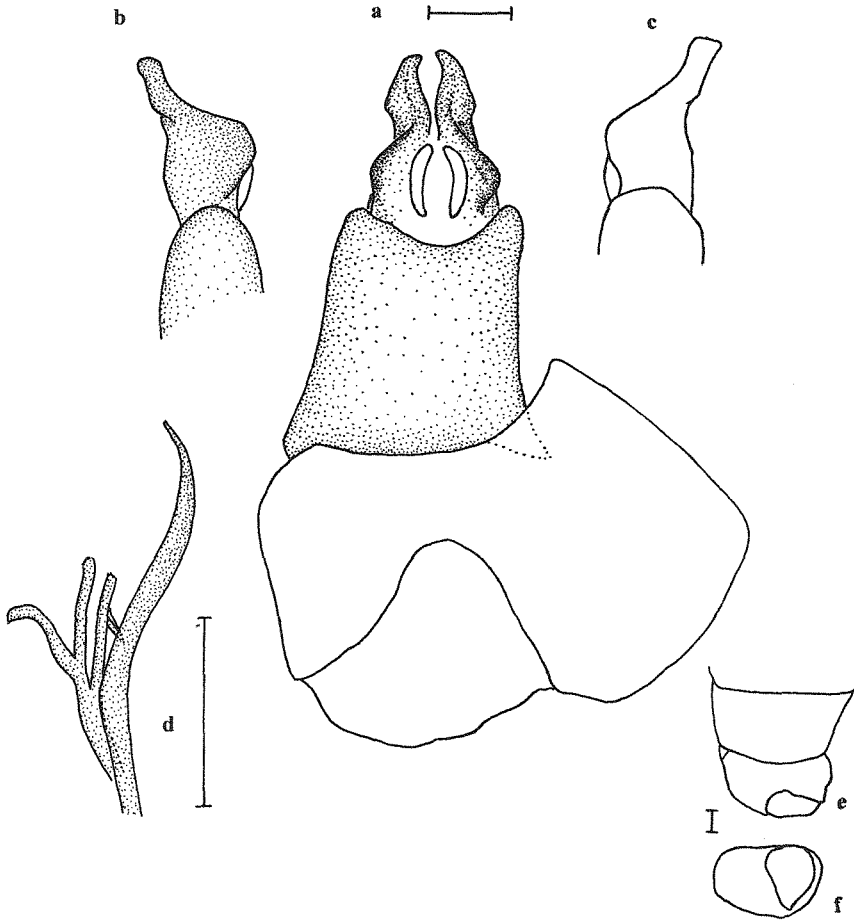
*Tomosvaryella sepulta* sp. n.

(figs 12, 13i)

**Description:** Male. Third antennal segment yellow-brown, acuminate. Frons, eyes touching for distance equal to ocellar triangle; lower half silver-grey pubescent. Face silver-grey pubescent. Occiput lower two-third silver-grey pubescent; in upper part more greyish brown. Thorax. Humeri yellow. Mesonotum and scutellum subshining black-brown; greyish brown dusted, anteriorly more greyish. Halter yellowish white. Dorsocentral hairs poorly developed posteriorly, few short pale hairs, anteriorly somewhat longer. Wing. Fourth costal section 2-3 times longer than third section. Cross-vein *r-m* at middle of discal cell. Legs dark; knees with basal fifth to sixth of tibiae yellow. Front femora with pair of basal spines. Tarsal segments brown, hind tarsal segments flattened and broadened. Hind trochanter smooth. Abdomen. Lateral fan with 5-7 palish bristles. Abdominal terga subshining black; greyish brown dusted, lateral margins more greyish. All terga with short dispersed and darkish hairs. Sterna brown. Postabdomen Fig. 12. Female, as male except for the following characters. Third antennal segment longer acuminate. Frons completely greyish dusted except just in front of ocellar triangle. Pulvilli and claws about 1.5 times as long as last tarsal segment. Postabdomen Fig. 13i.

**Material examined:** ♂ holotype, 9♂♂ 7♀♀ paratypes, SPAIN, Alicante, Moraira, 26.II.-5.III.1990 (one female paratype designated as allotype). Paratypes, same locality as holotype, 1♂, 25.-30.IX.1989; 1♂ 2♀♀, 8.-13.X.1989; 1♂, 21.-27.X.1989; 1♀, 1.-7.I.1990; 2♀♀, 5.-11.II.1990; 3♂♂ 2♀♀, 12.-18.II.1990; 3♂♂ 3♀♀, 12.-20.III.1990; 5♂♂, 2.-13.IV.1990. Monegros, Zaragoza Prov., Pina de Ebro, Retuerta de Pina, 1♂, 20.IV.1991, Malaise trap (sample 2951); 1♂, 25.IV.1991, plates between junipers and *Rosmarinus officinalis* (sample 2972); 1♂, 7.V.1991, Malaise trap (sample 3060); 1♂, 24.V.1991, Malaise trap (sample 3236); 1♂, 7.VI.1991, Malaise trap (sample 3296).





**Fig. 12:** Male terminalia *Tomosvaryella sepulta* sp. n.: a: dorsal view, b: outer surstylus, lateral view, c: inner surstylus, lateral view, d: apical part aedeagus and ejaculatory ductuli, lateral view, e: abdominal tergum 5 and sternum 8, dorsal view, f: sternum 8, distal view (scale 0.1 mm).

**Etymology:** From the Latin 'sepelia' meaning to lay to rest or to bury. This is an allusion to the seasonal difference with the closely related species *T. resurgens* sp. n.

**Discussion:** This species is closely related to *T. resurgens* sp. n. and to *T. minima* based on the male genital structure as discussed above. All type material deposited in collections of KBIN except 4 paratypes in MNCN.

***Tomosvaryella trichotibialis* DE MEYER, 1995**

(fig. 13j)

**Diagnosis:** Female. As the male (described in DE MEYER, 1995) except for the following characters. Third antennal segment sometimes more yellowish. Frons shining black in front of ocellar triangle for length equal to triangle, lower third silver-grey pubescent, otherwise subshi-

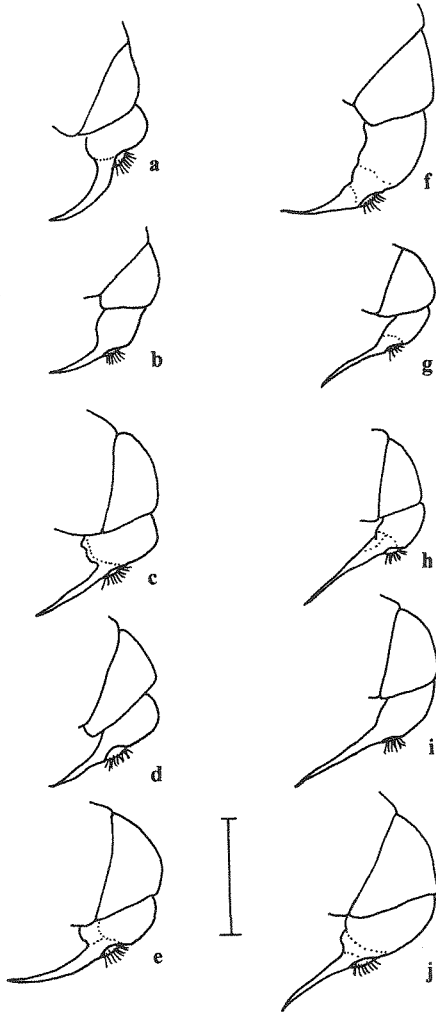


Fig. 13: Female terminalia, lateral view. a: *Eudorylas blascoi* sp. n., b: *E. dilatatus* sp. n., c: *E. mediterraneus* sp. n., d: *E. monegrensis* sp. n., e: *E. wahisi* sp. n., f: *Tomosvaryella hildeae* sp. n., g: *T. hispanica* sp. n., h: *T. resurgens* sp. n., i: *T. sepulta* sp. n., j: *T. trichotibialis* (scale 0.5 mm).

ning black with weak greyish brown dusting. Dorsocentral rows anteriorly weakly developed. Fourth costal section about three times as long as third section. Legs, knees and basal fifth to fourth of tibiae yellow. Front femur with well developed pair of basal spines. Hind tibia broadened distally as in male but comb of bristles only weakly developed. Claws and pulvilli longer, at least twice as long as last tarsal segment. Ovipositor with base stout and globular; piercer about as long as base, basal three-fifths with lateral flanges (Fig. 13j).

**Material examined:** SPAIN, Monegros, Zaragoza Prov., Pina de Ebro, Retuerta de Pina, 1♂, 16.IX.1990, coloured plates in a zone with salt (sample 2096); 9♂♂ 3♀♀, 18.IX.1990, Malaise trap (sample 2106); 1♂, 20.V.1991, Moericke trap (sample 3115); 4♂♂ 3♀♀, 24.V.1991, Malaise trap (sample 3236); 13♂♂ 9♀♀, 7.VI.1991, Malaise trap (sample 3296); 12♂♂ 15♀♀, 20.VI.1991, Malaise trap (sample 3545); 7♂♂ 4♀♀, 6.VII.1991, Malaise trap (sample 3648);

2♂♂, 25.VII.1991, Malaise trap (sample 3702); 1♂ 4♀♀, 7.VIII. 1991, Malaise trap (sample 3751); 1♂ 3♀♀, 25.VIII.1991, Malaise trap (sample 3791); 1♂, 9.IX.1991, Malaise trap (sample 3880); 5♂♂ 1♀, 10.IX.1991, Malaise trap (sample 3912); 3♂♂ 4♀♀, 23.IX.1991, Malaise trap (sample 4012); 1♀, 9.X.1991, Malaise trap (sample 4065); 1♂, 18.IX.1992, light trap (sample 5311); 1♀, 25.VI.1993, light trap (sample 5694). Alicante, Moraira, 3♂♂ 2♀♀, 21.-24.IX.1989; 2♂♂, 25.-30.IX.1989; 8♂♂ 3♀♀, 2.-7.X.1989; 4♂♂ 1♀, 8.-13.X.1989; 11♂♂ 10♀♀, 14.-20.X.1989; 13♂♂ 15♀♀, 21.-27.X.1989; 16♂♂ 12♀♀, 27.X.-3.XI.1989; 3♂♂ 2♀♀, 4.-10.XI.1989; 4♀♀, 11.-19.XI.1989; 1♀, 20.-27.XI. 1989.

**Discussion:** This species was described from a single male specimen from Snit (Israel). It is common in the samples from Pina de Ebro and Moraira, including the hitherto undescribed female for which a description is given above.

## General discussion

In total 29 species were recorded of which 11 are new to science and an additional 15 new to the Spanish fauna. The fauna in general shows a mixed mediterranean and western European affinity. There is an outspoken difference between the two main collecting sites with Moraira showing a greater affinity with the pipunculid fauna found in the Atlantic and Continental regions (7 out of 9 species that are not new). Pina de Ebro shows more affinity with the fauna from the Mediterranean region, especially with Israeli material recently described. Only 4 out of 11 species that are not new also occur in Atlantic and Continental Europe. In total, 46 species are now reported from Spain.

**Table 1:** List of Pipunculidae reported from Spain (\*: species new to science or new to Spanish fauna).

SPECIES	SOURCE
<i>Chalarus brevicaudis</i> JERVIS, 1992	*
<i>Chalarus spurius</i> (FALLÉN, 1816)	COE, 1969
<i>Chalarus pughi</i> COE, 1966	COE, 1969 (identification uncertain)
<i>Verrallia aucta</i> (FALLÉN, 1817)	*
<i>Pipunculus carlestolrai</i> KUZNETZOV, 1993	KUZNETZOV, 1993
<i>Pipunculus omissinervis</i> BECKER, 1889	TANASITSHUK, 1988
<i>Pipunculus thomsoni</i> BECKER, 1898	STROBL, 1899 (identification uncertain)
<i>Cephalops conjunctivus</i> COLLIN, 1958	DE MEYER, 1992a
<i>Cephalops varius</i> (CRESSON, 1911)	*
<i>Eudorylas blascoi</i> sp. n.	*
<i>Eudorylas demeyeri</i> KOZÁNEK, 1993	KOZÁNEK, 1993
<i>Eudorylas dilatatus</i> sp. n.	*
<i>Eudorylas falcifer</i> sp. n.	*
<i>Eudorylas fluviatilis</i> (BECKER, 1900)	STROBL, 1909
<i>Eudorylas fuscipes</i> (ZETTERSTEDT, 1844)	STROBL, 1899
<i>Eudorylas inferus</i> COLLIN, 1956	*
<i>Eudorylas mediterraneus</i> sp. n.	*
<i>Eudorylas monegrensis</i> sp. n.	*
<i>Eudorylas montium</i> (BECKER, 1898)	COE, 1969
<i>Eudorylas obliquus</i> COE, 1966	*
<i>Eudorylas obscurus</i> COE, 1966	*

<i>Eudorylas setosus</i> (BECKER, 1908)	*
<i>Eudorylas terminalis</i> (THOMSON, 1870)	*
<i>Eudorylas tumidus</i> sp. n.	*
<i>Eudorylas wahisi</i> sp. n.	*
<i>Eudorylas zonatus</i> (ZETTERSTEDT, 1849)	STROBL, 1909
<i>Dorylomorpha incognita</i> (VERRALL, 1901)	*
<i>Dorylomorpha semiclavata</i> ALBRECHT, 1990	ALBRECHT, 1990
<i>Tomosvaryella argyratoides</i> DE MEYER, 1995	*
<i>Tomosvaryella cilifemorata</i> (BECKER, 1907)	STROBL, 1909 (under <i>argyrostictus</i> )
<i>Tomosvaryella cilitarsis</i> (STROBL, 1910)	*
<i>Tomosvaryella docta</i> DE MEYER, 1995	*
<i>Tomosvaryella freidbergi</i> DE MEYER, 1995	*
<i>Tomosvaryella geniculata</i> (MEIGEN, 1824)	STROBL, 1899
<i>Tomosvaryella hildeae</i> sp. n.	*
<i>Tomosvaryella hispanica</i> sp. n.	*
<i>Tomosvaryella kuthyi</i> ACZÉL, 1944	COE, 1969
<i>Tomosvaryella lyneborgi</i> COE, 1969	COE, 1969
<i>Tomosvaryella minima</i> (BECKER, 1898)	TANASITSHUK, 1988
<i>Tomosvaryella mutata</i> (BECKER, 1898)	STROBL, 1909
<i>Tomosvaryella nigronitida</i> (COLLIN, 1958)	COE, 1969
<i>Tomosvaryella palliditarsis</i> (COLLIN, 1931)	COE, 1969
<i>Tomosvaryella resurgens</i> sp. n.	*
<i>Tomosvaryella rondanii</i> (COLLIN, 1945)	*
<i>Tomosvaryella sepulta</i> sp. n.	*
<i>Tomosvaryella trichotibialis</i> DE MEYER, 1995	*

The knowledge of the Spanish pipunculid fauna and of the Mediterranean fauna in general is however too anecdotal to make any definite conclusions on the zoogeographical relationships. In comparison with the only other site that has been studied more in detail, Israel and the Sinai (see DE MEYER, 1995), there is a common fauna in both places. For the Israeli fauna it was argued that it has predominantly West-Palaeartic elements but that there is also a distinct relationship with the Afrotropical fauna. The latter seems to be largely if not completely missing in the Spanish fauna.

Seasonal occurrence differs from patterns observed in West and Central Europe. In Belgium for example (see DE MEYER & DE BRUYN, 1989), adult flight activity is mainly confined between the months May and September with either univoltine or bivoltine graphs (occasionally trivoltine). In Spain, Pipunculidae seem to occur throughout the year. The same species as found in western Europe (e.g. *Verrallia aucta*, *Eudorylas obliquus*, *E. obscurus*, *E. terminalis* and *Tomosvaryella kuthyi*) occur in Spain over a much longer period and show peak periods in March-April and October-December. Between closely related species like *T. resurgens* and *T. sepulta* there is also clear phenological difference with *T. resurgens* predominantly occurring in the latter part of the year (mainly from September till November) with only a few specimens occurring in the first part of the year. *T. sepulta* shows the opposite seasonal pattern. This is clearly indicated in the material from Pina de Ebro, and partly also in Moraira although the number of specimens in the latter is low. There seems however to be a more global difference between the two sampling sites as well for species occurring at both localities. This observation is limited to new species or mediterranean species since records for western species are limited

or absent for Pina de Ebro. We notice here that peak periods recorded in Alicante during October-November and February-April, are absent in Pina de Ebro. The data here are however incomplete since the records from Alicante do not represent a complete annual cycle, hence occurrence during May-August cannot be compared.

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