Bull. Annls Soc. r. belge Ent. 131 (1995): *107-125*

A contribution to the knowledge of the remarkable fauna of the gypsiferous hills of Los Monegros (Zaragoza, Spain): The genus *Platypalpus* (Diptera, Empidoidea) with the description of five new species*

by Patrick GROOTAERT

Department of Entomology, Koninklijk Belgisch Instituut voor Natuurwetenschappen, Vautierstraat 29, B-1040 Brussels, Belgium.

Abstract

Nineteen species of the predatory genus Platypalpus *are reported from Los Monegros (Spain, Zaragoza, Pina de Ebro). Five of them are described as new for science. Three are reported for the first time since their description. Species diversity and species composition show that the Monegros area has an unique fauna which needs conservation.*

Key words: Diptera, Empidoidea, gypsiferous soils.

Résumé

La faune de Los Monegros (Espagne, province de Saragosse, Pina de Ebro) compte dix-neuf espèces de Diptères prédateurs appartenant au genre Platypalpus. *Cinq espèces sont décrites comme nouvelles pour la science et trois autres sont signalées pour la première fois depuis leur description. Le nombre d'espèces ainsi que la composition spécifique indiquent que la région de Los Monegros possède une faune unique qui nécessite des mesures de conservation.*

Introduction

The Monegros region is a very interesting area due to its gypsiferous

* Received 7.II.1995

soils and associated gypsophilous vegetation (DUVIGNEAUD & DENAEYER-DE SMET, 1966). The area is severely threatened by changes in the agricultural use of the land (PEDROCCHI & SANZ, 1991) and it is hoped that the study of its flora and fauna can contribute to the protection of this peculiar area.

Los Monegros lies in the central part of the Ebro valley (Fig. 1), East of the town of Zaragoza. It is a desert-like area and the climate is of the "arid-continental" type. The temperatures range from -10° to more than 40°C. The rainfall is low (200-400 mm per year) and frequent NW and SE winds have a considerable dehydrating effect (OCHOA, 1982). The climax vegetation is the juniper wood, but the original vegetation was cut for agriculture and is only conserved in the hills. The landscape is an open, low garrigue with gypsophilous plants and it resembles the North-African steppes (BRAUN-BLANQUET & BOLOS, 1957).

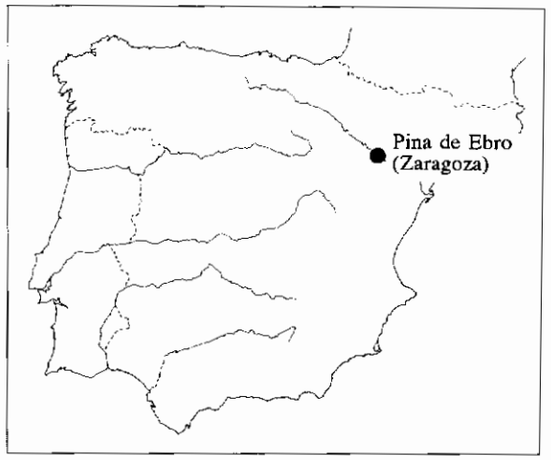


Fig. 1. Pina de Ebro lays on the Ebro river in north-eastern Spain.

Faunistical and taxonomical studies on arthropods from the area are now available for e.g. centipedes (SERRA, 1978), Orthoptera (PARDO GONZALEZ *et al.*, 1990), Coleoptera Melyridae (CONSTANTIN, 1991), halophilous beetles (VIVES & VIVES, 1978), Strepsiptera (KATHIRITHAMBY & KIFUNE, 1991), the Diptera families Sciaridae (MOHRIG & BLASCO-ZUMETA, 1992), Trixoscelididae (CARLES-TOLRÁ, 1993a,b), Heleomyzidae (CARLES-TOLRÁ, 1992a), Limoniidae (GEIGER, 1993), Carnidae (CARLES-TOLRÁ, 1992b), Calliphoridae (ROGNES, 1993) and Chloropidae (DE BRUYN & BLASCO-ZUMETA, 1994).

Material and methods

All the material was collected by Javier BLASCO-ZUMETA from 1989 to 1993 in Los Monegros, near the locality Pina de Ebro. The area sampled was a juniper wood of approximately 2,000 hectares called the "Retuerta de Pina" (UTM grid reference 30TYL29). This forest is a species-poor

community characterized by the presence of *Juniperus thurifera* L., *Rhamnus lycioides* L., *Ephedra nebrodensis* TINEO ex GUSS. and *Asparagus acutifolius* L. The mean altitude is 360 m.

Material was collected with Moericke traps (60×60×10 cm traps 70 cm above the ground, yellow at inside, green at outside, and filled with soapy water), coloured dishes (yellow, blue, white plastic dishes 26×16×4 cm placed on the ground), Malaise traps and sweepings on plants. All type material is conserved in alcohol in the collections of the K.B.I.N. (Brussels).

Faunistical account

P. anomalitarsis CHVÁLA & KOVALEV, 1974

Material examined: Retuerta de Pina, 2.IV.1989, 2♂♂ (sweeping on *R. officinalis* L.); 23.IX.1990, 1♂ (Malaise trap); 16.I.1991, 1♀ (pit fall trap with beer); 24.V.1991, 1♀ (Malaise trap).

P. anomalitarsis is a species with a western Mediterranean distribution. It is actually known from North Africa (Algeria) and Spain (prov. Granada; Alicante, GROOTAERT, 1993; prov. Zaragoza).

P. chrysonotus (STROBL, 1899)

Material examined: Retuerta de Pina, 28.V.1992, 1♂, 1♀ (sweeping on *T. canariensis*).

P. chrysonotus is a rather common species with a wide western Mediterranean distribution. At the moment it is known from Spain, Algeria and Tunisia.

P. distichus GROOTAERT & CHVÁLA, 1992

Material examined: Retuerta de Pina, 7.V.1991, 1 ♀ (Moericke trap).

P. distichus was described from a few specimens from southern Spain (Granada, Almeria). This is the first record since its description which shows that its distribution is not limited to South Spain.

P. incertoides GROOTAERT & CHVÁLA, 1992

Material examined: Retuerta de Pina, 24.V.1991, 2♂♂ (Malaise trap).

P. incertoides was described from the Alicante province. There, it was very abundantly present in a Malaise trap (GROOTAERT, 1993).

P. kirtlingensis GROOTAERT, 1986

Material examined: Retuerta de Pina, 2.IV.1989, 1♂ (sweeping on *R. officinalis* L.); 2.VI.1990, 1♀ (coloured dishes); 26.V.1991, 1♂ (sweeping on *O. nervosum*); 28.V.1992, 3♂♂, 2♀♀ (sweeping on *T. canariensis*).

Together with its sister species *P. pictitarsis*, *P. kirtlingensis* has a wide distribution throughout Europe (GROOTAERT & CHVÁLA, 1992). Concerning the Mediterranean region it is now known from Spain, Malta and the former Yugoslavia. Generally it is quite rare, but it can be very abundant in wheat fields (GROOTAERT, unpubl.; STARK, 1994).

***P. morgei* CHVÁLA, 1981**

Material examined: Retuerta de Pina, 7.V.1991, 1 ♀ (Moericke trap); 25.IV.1991, 3♂♂, 7♀♀ (coloured dishes); 26.V.1991, 2♂♂, 1♀ (sweeping on *O. nervosum*).

P. morgei was described from southern Spain. The second record came from the Alicante province where it was found in fairly large numbers in a Malaise trap (GROOTAERT, 1993). At the moment, *P. morgei* is only known from Spain.

***P. niveiseta* (ZETTERSTEDT, 1842)**

Material examined: Retuerta de Pina, 11.IX.1990, 1♂, 1♀ (Malaise trap), 17.IX.1990, 1♂ (Malaise trap); 25.IV.1991, 1♀ (Malaise).

P. niveiseta seems to be widely distributed throughout Europe, but it is very rare in temperate regions. The abundance in a Malaise trap in Alicante (GROOTAERT, 1993) suggests that this species finds its optimal conditions in the Mediterranean region.

***P. ostiorum* (BECKER, 1902)**

Material examined: Retuerta de Pina, 17.X.1990, 1♀ (Moericke trap); 12.I.1991, 1♀ (coloured dishes); 25.IV.1991, 1♀ (coloured dishes); 9.VI.1991, 1♂ (coloured dishes).

P. ostiorum (= *P. spinicercus* CHVÁLA, 1981) has a very wide Mediterranean distribution. At the moment it is known from Spain, Corsica, Italy, Malta, Morocco, Algeria, Tunisia and Egypt (GROOTAERT & CHVÁLA, 1992).

***P. pallidiventris* (MEIGEN, 1822)**

Material examined: Retuerta de Pina, 29.IV.1990, 1♂ (coloured dishes); 28.V.1990, 1♀ (coloured dishes); 2.VI.1990, 1♀ (coloured dishes); 7.V.1991, 1♂ (Malaise trap); 7.V.1991, 1♀ (Moericke trap); 26.V.1991, 4♂♂, 2♀♀ (sweeping on *O. nervosum*); 20.V.1991, 2♀♀ (Moericke trap); 9.VI.1991, 1♀ (sweeping on *S. vera* and *T. canariensis*); 12.VI.1990, 1♀ (coloured dishes); 28.V. 1992, 1♂ (sweeping on *T. canariensis*).

An eurytopic species with a West European distribution (GROOTAERT & CHVÁLA, 1992). In the Mediterranean region it is more abundant in mountainous areas than in the lowland.

***P. pictitarsis* (BECKER, 1902)**

Material examined: Retuerta de Pina, 9.VI.1991, 1♀ (sweeping on *S. vera* and *T. canariensis*); 28.V.1992, 1♂, 1♀ (sweeping on *T. canariensis*).

A species with a wide distribution in Europe. In contrast to its sister-species *P. kirtlingensis* it has a farther east distribution. It is also recorded from Greece, Cyprus and Egypt. In temperate Europe, it is often found in wheat fields.

***P. praecinctus* (COLLIN, 1926)**

Material examined: Retuerta de Pina, 28.V.1990, 1♂ (coloured dishes); 20.V.1991, 1♀ (Moericke trap).

P. praecinctus has a wide distribution in Europe and it is also recorded from North Africa. In temperate regions it is only locally common.

***P. pragensis* CHVÁLA, 1989**

Material examined: Retuerta de Pina, 2.IV.1989, 1♂, 1♀ (sweeping on *R. officinalis*); 21.VI.1989, 2♂♂, 1♀ (sweeping on *S. vera* and *A. halimus*); 14.IV. 1990, 1♂ (coloured dishes); 12.VI.1990, 1♀ (coloured dishes), 11.IX.1990, 2♀♀ (Malaise trap); 9.IV.1991, 2♂♂, 1♀ (Malaise trap); 25.IV. 1991, 8♂♂, 8♀♀ (Malaise trap); 25.IV.1991, 3♂♂, 5♀♀ (coloured dishes); 7.V.1991, 51♂♂, 71♀♀ (Malaise trap); 7.V.1991, 2♂♂, 3♀♀ (Moericke trap); 20.V.1991, 2♂♂ (Malaise trap); 24.V. 1991, 7♂♂, 11♀♀ (Malaise trap); 28.VI.1992, 3♀♀ (sweeping on *S. vermiculata*); 26.VII.1992, 1♀ (sweeping on grasses next to a way).

P. pragensis was only recently described by CHVÁLA (1989) from an area in the neighbourhood of Prague known for its warmer microclimate (CHVÁLA, pers. comm.). Its abundance here suggests that this species is perhaps a true Mediterranean species with some local relict populations in temperate Europe.

***P. pseudoexiguus* (STROBL, 1909)**

Material examined: Retuerta de Pina, 7.V.1991, 2♂♂, 1♀ (Moericke trap); 20.V.1991, 1♀ (Moericke trap).

P. pseudoexiguus was described by STROBL (1909) from specimens of southern Spain. The specimens of Monegros are the first record since the description. It should be noted that the posteroventral bristles on the mid femora are very short and indeed yellow so they are quite inconspicuous. The palpi are small, but larger than the third antennal segment. The cross veins are contiguous.

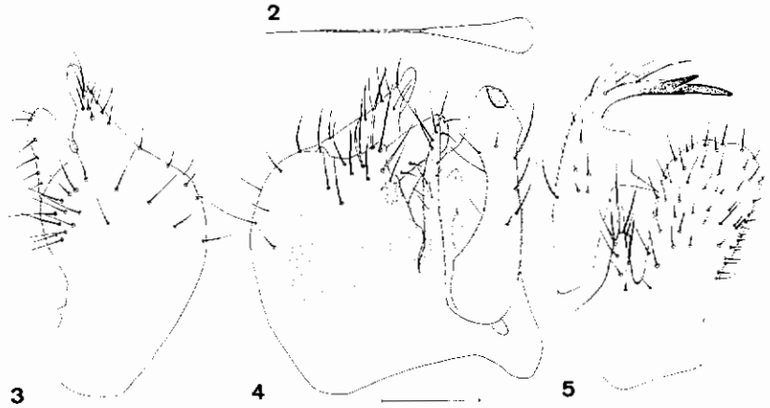
Systematic account

***Platypalpus blascoi* sp. nov.** (Figs 2-5)

A small (1.9-3.2 mm) black species with a single pair of pale vertical bristles. Antennae pale; third segment two and a half times as long as broad. Mid femora without posteroventral bristles. Mid tibiae without spur.

Male

Head black. Frons narrow, in front as wide as front ocellus or half as wide as second antennal segment, slightly widening towards ocellar triangle, thus not parallel-sided; faintly grey-dusted. Face narrower than frons, clypeus large, triangular, shining black. A pair of short, pale anterior ocellars, as long as second antennal segment; post-ocellars minute. A pair of pale verticals, nearly twice as long as second antennal segment. Pale pubescence on occiput, short above, longer below. Antennae (Fig. 2) yellowish-brown, including arista. Third antennal segment two and a half times as long as broad; arista one and a half times as long as third segment. Palpi small, circular, pale in ground-colour, and bearing some pale subterminal bristles.



Figs 2-5. *Platypalpus blascoi* sp. nov. paratype male. 2: antenna; 3: right periandrial lamella; 4: periandrium; 5: left periandrial lamella. Scale 0.1 mm.

Thorax black in ground-colour. Mesonotum polished, but humeri and notopleural depression grey dusted. Pleura dusted, but sternopleura largely polished. Acrostichals short, biserial; the rows widely separated and the hairs of each row converging. Dorsocentrals uniserial, twice as long as acrostichals, ending in a pair of long prescutellars. A short but distinct humeral with some bristles in front; two notopleurals, a postalar and a pair of long apical scutellar bristles.

Wings clear with pale veins; stigma distinct. Veins R 4+5 and M parallel, gently bending down. Basal cells quite short, occupying only basal third of wing; upper cell narrow, lower basal cell twice as large; cross veins contiguous. Vein closing anal cell straight and recurrent. Anal lobe well developed. Squamae and halteres pale.

Legs yellow, only tarsi a little brown. Fore femora quite slender, a little thickened on basal third, and with a double row of short yellow bristles. Fore tibiae not dilated. Mid femora only a little stouter than fore femora, ventrally with the usual double row of spiny bristles, those in the posterior row a little longer. An anterior bristle on basal third; no posteroventral bristles. Mid tibiae without spur. Hind legs slender; femora with indistinct ventral bristles.

Abdomen brown with short, pale bristles. Hypopygium black, rather wide (Figs 3-5). Left periandrial lamella with a tubercle; bristling uniformly distributed over the plate; marginal bristles not differentiated. Right periandrial lamella with a double extension. Right cercus very slender. Left cercus large with a long bent, bifurcate black tip.

Length: body: 1.9-3.2 (holotype in alcohol) mm; wing: 1.9 mm.

Female

In most respects resembling male.

Length: body: 1.9 mm; wing: 1.8 mm.

Type material: Holotype male: Pina de Ebro (Retuerta de Pina, Monegros region), 22.VIII.1990 (coloured dishes). Paratypes: same location, 1♂ (sweeping on *S. vera* and *A. halimus*); 11.VIII.1990, 1♀ (sweeping on *R. sativa* L.).

Derivatio nominis: The present species is dedicated to Mr. Javier Blasco-Zumeta who worked very hard to protect the very interesting site of Los Monegros.

Discussion

The types are perhaps a little decoloured so antennae and tarsi may be darker than described above. *P. blascoi* belongs to the *unguiculatus*-group. This species group contains species with a single, but also with a double pair of vertical bristles. The antennae are generally pale and the palpi small and circular. The mesonotum is always polished, sometimes including the humeri. Pleura are sometimes completely polished, but the sternopleura are always largely polished. The humeral bristle is generally absent, but sometimes there is a more or less distinct bristle. The acrostichals are short, biserial and have a tendency to be absent. The legs are yellow and the tarsi are at most brown. Fore and mid femora are comparable in size, not very thickened. There are no posteroventrals on the mid femora and the mid tibiae bear no spur or at most a short pointed projection.

The *unguiculatus*-group has normally a northern or montane distribution. The only southern species is *P. pseudounguiculatus* (STROBL, 1909). In this species, the third antennal segment is a litter longer than deep, the humeri are also polished and the mid tibiae bear a very short, pointed apical spur. *P. anomalicerus* (BECKER, **1092**), which was also placed by GROOTAERT & CHVÁLA (1992) in the *unguiculatus*-group, but which probably belongs to another group, occurs in North-Africa. It has a very broad, flattened arista and the mid femora bear posteroventral bristles. All the other species have a northern or a montane distribution: *P. unguiculatus* (ZETTERSTEDT, 1838) has a northern and even a holarctic distribution; *P. zetterstedti* (CHVÁLA, 1971), *P. laestadianorum* (FREY, 1913), *P. sahlbergi* (FREY, 1909), the only yellow species, and *P. lapponicus* are only reported from northern Europe (CHVÁLA, 1989); *P. alter* (COLLIN, 1961) has both a northern and central European distribution; *P. carpathicus* CHVÁLA & KOVALEV, 1985, is at the moment only known from subalpine zones of the Carpathians.

***Platypalpus bequaertoides* sp. nov.** (Figs 6-10)

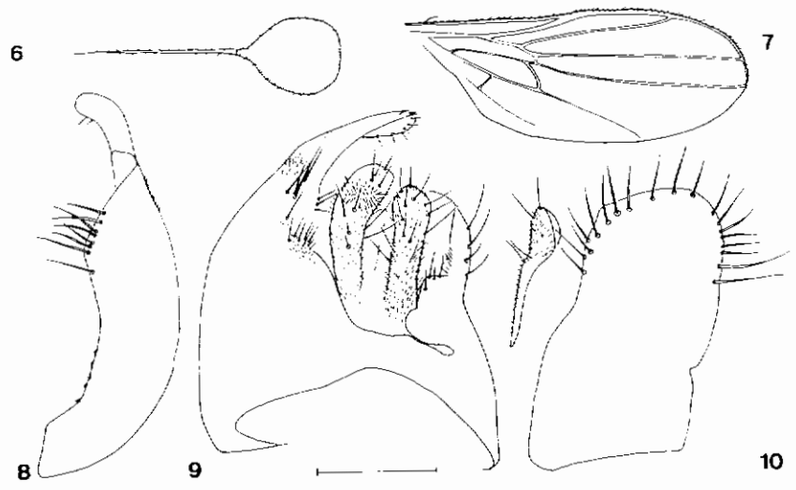
A small black (about 1.9-2.7 mm) species with two pairs of black vertical bristles, and short black antennae. Mesonotum dusted with quadriserial acrostichals. Legs yellow, no posteroventral bristles on mid femora, and tibial spur rather short, as long as tibia is deep, pointed.

Male

Head black in ground-colour, grey dusted. Frons rather broad and short, broader than second antennal segment and slightly widening out. Face slightly narrower, lighter dusted, including clypeus. Anterior ocellar bristles slightly shorter than the two pairs of black vertical bristles, which are longer than the third antennal segment; posterior ocellars very short. Antennae (Fig. 6) black; third segment, very short and broad, almost circular, scarcely longer than deep; arista at least twice as long as third segment. Palpi brown in ground-colour, short-ovate, covered with whitish hairs, and with a brownish subterminal bristle.

Thorax black in ground-colour, mesonotum grey dusted, pleura more silvery-grey, anterior part of sternopleura broadly polished. All thoracic bristles black, but hairs paler. Acrostichals quadriserial, the hairs in outer rows distinctly diverging; dorsocentrals very narrowly biserial; all rather small (as long as second antennal segment), except for last pair of longer prescutellars. One not very long humeral bristle, two notopleurals (upper one strong, lower one shorter), one strong postalar, and a pair of apical scutellars, with a small hair on each side.

Legs yellow, except for the brown posterior four coxae, the posterior pair of trochanters, apical half of hind femora and the somewhat darkened, but not annulated tarsi. Fore femora not very stout on their basal two thirds, ventrally on apical half with a row of pale bristly hairs shorter than femur is wide. Tibiae slender and covered with only short fine hairs. Mid femora not very much stouter than fore femora; ventrally with the usual a double row of small black bristly hairs (those in the posterior row longer); no posteroventral bristles. Mid tibiae with a slender, black, pointed apical spur which is nearly as long as tibia is deep. Hind legs longer and more slender than anterior two pairs, covered with only short fine pale hairs.



Figs 6-10. *Platypalpus bequaertoides* sp. nov. paratype male. 6: antenna; 7: wing; 8: right periandrial lamella; 9: periandrium; 10: left periandrial lamella with detail of left cercus. Scale 0.1 mm.

Wings (Fig. 7) clear with veins pale on basal half of wing, darker in apical half. A black costal bristle and a distinct brown stigma-like swelling at the end of R 1. Veins R 4+5 and M straight, slightly diverging towards wing tip. Cross veins contiguous, lower cross vein oblique; the vein closing anal cell slightly recurrent. Anal vein very faint. Squamae and halteres pale.

Abdomen shining black on dorsum. Venter of abdomen near base translucent brownish. Pubescence whitish, rather dense, very short on dorsum; hairs at sides and posteriorly hardly longer. Hypopygium rather short, lamellae rather dark brown, polished; details as in Figs 8-10.

Length: body: 1.9 mm; wing: 1.6-1.7 mm.

Female

Almost identical to male. Hind legs completely brown. Cerci short.

Length: body: 2.7 mm; wing: 1.9 mm.

Type material: Holotype male: Pina de Ebro (Retuerta de Pina, Monegros region), 26.VII.1992; Paratypes: 1♂ same origin as holotype; 29.IV. 1990, 1♀ (coloured dishes).

Derivatio nominis: the species is named after its resemblances with *P. bequaerti*.

Discussion

P. bequaertoides is probably closely related to *P. maltensis* GROOTAERT & CHVÁLA. The latter has a slightly longer (twice as long) third antennal segment, yellow palpi, wings with black veins, fore tibiae brownish, and mid femora only yellow on basal fourth.

***Platypalpus javieri* sp. nov.** (Figs 11-16)

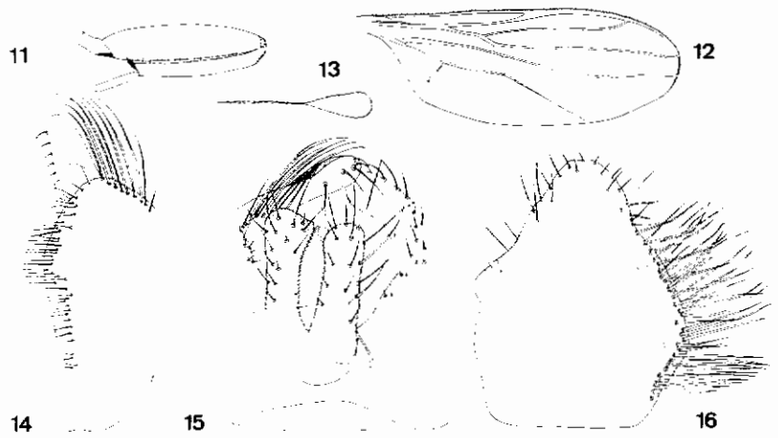
A medium-sized (2.6-2.8 mm) polished black species with one pair of dark vertical bristles. Antennae black; third segment twice as long as deep, arista nearly twice as long. Mesonotum polished with yellowish-brown bristles. Central part of mesopleura and sternopleura shining. Acrostichals biserial, close together, nearly on one line. Mid tibiae with a pointed spur, as long as tibia is deep.

Male

Frons parallel-sided as broad as second antennal segment, grey dusted. Face narrower than frons in front, parallel-sided and densely silvery-grey dusted; clypeus shining black. Occiput rather thinly dusted. Anterior pair of ocellar bristles yellowish-brown, shorter than third antennal segment. One pair of dark vertical bristles slightly longer (but still short), wide apart. Occiput clothed with minute dark hairs above, with longer whitish hairs below. Antennae (Fig. 13) unicolorous black, third segment nearly twice as long as deep, apically pointed; arista nearly twice as long. Palpi almost circular, not very large, rather pale yellow in ground-colour, and with a long, pale subterminal bristle. Proboscis nearly as long as head is high.

Thorax polished black on mesonotum, but humeri, very narrow lateral margins, postalar calli, scutellum and metanotum thinly grey dusted, not shining. Central part of mesopleura and sternopleura polished black. All hairs and bristles yellowish-brown. Acrostichals short, narrowly biserial, almost on one line; dorsocentrals longer, uniserial, ending in two pairs of longer prescutellars. A distinct humeral with a small hair in front, two stouter notopleurals and a postalar; scutellum with a pair of long apicals with a short hair at each side.

Wings (Fig. 12) brownish tinged, with veins yellowish-brown near base of wing, darker near tip. R4+5 and M slightly diverging near middle, converging towards wing tip and ending parallel to each other in costa; cross veins separated by a distance twice as long as length of r-m. Vein closing anal cell straight and with a right angle on anal vein. The latter very faintly visible. Halteres and squamae pale yellowish, latter with pale fringes.



Figs 11-16. *Platypalpus javieri* sp. nov. paratype male. 11: mid leg; 12: wing; 13: antenna; 14: right periandrial lamella; 15: periandrium; 16: left periandrial lamella. Scale 0.1 mm.

Legs yellow. Posterior four coxae slightly brownish. Tarsi brown-annulated. Legs covered with short pale hairs. Anterior four femora almost equally stout, hind femora slender. Mid femora ventrally with a double row of small black spines and a row of pale posteroventral bristles, which are about as long as one-half depth of the femur; anteriorly in apical quarter, a short yellowish bristle. Fore tibiae only slightly dilated. Mid tibiae with a black-pointed apical spur, which is slightly longer than tibia is deep (Fig. 11).

Abdomen entirely polished black, covered with scattered fine pale hairs which are longer at sides of terga and posteriorly. Genitalia (Figs 14-16) similarly polished black, not very large. Left periandrial lamella with numerous bristles in pairs on outer margin. Cerci enclosed within lamellae.

Length: body: 2.84 mm; wing: 2.3-2.56 mm.

Female

Resembling in most respects the male.

Length: body: 3.2 mm; wing: 2.3 mm.

Type material: Holotype male: Pina de Ebro (Retuerta de Pina, Monegros region), 9.IV.1991 (coloured dishes). Paratypes: 2♂♂, 1♀, same origin as holotype; 23.IV.1992, 2♂♂, 1♀ (sweeping on *E. vesicaria*); 20.V. 1992, 1♂; 25.IV.1991, 1♂ (coloured dishes).

Derivatio nominis: The species is dedicated to its collector Javier BLASCO-ZUMETA.

Discussion

Resembling the Spanish *P. zernyi* CHVÁLA, being similarly small, having a polished mesonotum and black antennae, but *P. zernyi* has extensively polished thoracic pleura, and the large thoracic bristles are pale. *P. argenteomicans* is characterized by the shorter tibial spur, and equally stout fore and mid femora.

***Platypalpus monegrensis* sp. nov.** (Figs 17-22)

A robust black species (4.8 mm) with two pairs of black vertical bristles, a dusted mesonotum and a short, triangular spur as long as tibia is wide. Antennae black, 2.5 to 3 times as long as wide. Acrostichals biserial, and three notopleurals present.

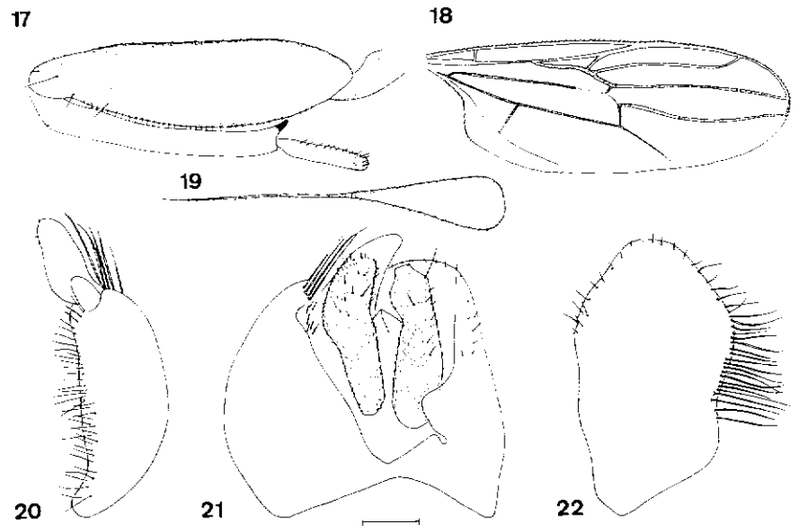
Head. Frons in front as wide as second antennal segment, gently widening above, grey dusted. Face as wide as frons, silvery grey dusted, including clypeus. Two pairs of black, diverging vertical bristles. Occiput above with numerous black bristly hairs becoming longer and pale below. Third antennal segment (Fig. 19) black, but less intensively black than basal segments; 2.5-3 times as long as wide; arista at most 1.5 times as long. Palpi oval, dark brown in ground-colour, with a single long, pale bristle as long as palpus.

Thorax black in ground-colour, grey dusted, except for the polished sternopleura. All hairs and bristles black. Acrostichals biserial, the rows close together, slightly diverging. Dorsocentrals biserial as well, most bristles as long as acrostichals, but at least four bristles, including the prescutellar, much longer. A short but distinct humeral, three notopleurals (close together, no posthumeral), a postalar and a pair of long apical scutellars with a long hair at each side and a pair of short hairs between them.

Wings (Fig. 18) with a yellow tinge, especially near stigma. Veins yellowish-brown. Stigma distinct. Vein R 4+5 with a gentle bow. Vein M diverging from vein R 4+5 towards middle, but than converging again and ending almost parallel near wing tip. Cross veins separated for a distance longer than upper cross vein. Lower cross vein oblique. Vein closing anal cell with a right angle on anal vein which is faintly sclerotized.

Legs with all coxae and trochanters black. All femora black except for their tips. Knee of mid legs black. Tibiae yellowish; tarsi brown, not annulated. Fore femora thickened on basal three quarters; ventrally with a double row of short pale bristles, hardly a third as long as femur is wide. Fore tibiae spindle-shaped with a row of short black dorsal bristles. Mid femora (Fig. 17) nearly twice as stout as fore femora with two short, black anterior bristles in apical third. Posteroventral bristles black, short, not half as long as femur is wide. Mid tibiae with a strong spur, just as

long as tibia is wide; triangular in ventral view, with a pointed black tip. Hind femora quite strong in comparison to other species, but much slender than anterior femora; ventrally with short pale hairs.



Figs 17-22. *Platypalpus monegrensis* sp. nov. holotype male. 17: mid leg; 18: wing; 19: antenna; 20: right periandrial lamella; 21: periandrium; 22: left periandrial lamella. Scale 0.1 mm.

Abdomen polished black, but each tergum with a pair of wide grey triangles at base; covered with short, whitish hairs being a little longer at sides. Hypopygium like in Figs 20-22.

Length: body: 4.8 mm; wing: 4.4 mm.

Type material: Holotype male: Pina de Ebro (Retuerta de Pina, Monegros region), 25.IV.1991 (coloured dishes).

Derivatio nominis: The species is named after the region where it was found.

Discussion

P. monegrensis resembles *P. agnitus* from Israel. The latter has however 4-5 notopleurals and a completely dusted abdomen in male. In the key (GROOTAERT & CHVÁLA, 1992) it could be confused with *P. thyamis* (SÉGUY) which has however irregular triserial acrostichals, and a longer tibial spur.

***Platypalpus hemispinosus* sp. nov.** (Figs 23-28)

A medium-sized (2.4-2.9 mm) black species with one pair of pale vertical bristles. Antennae black; third segment 1.5 times as long as deep. Mid femora anteroventrally near base with a number of black spine-like bristles. Anterior row of ventral spine-bristles not present in basal half; correspondingly, the ventral spine-like bristles on apical half of mid tibiae also lacking. A strong, pointed tibial spur present.

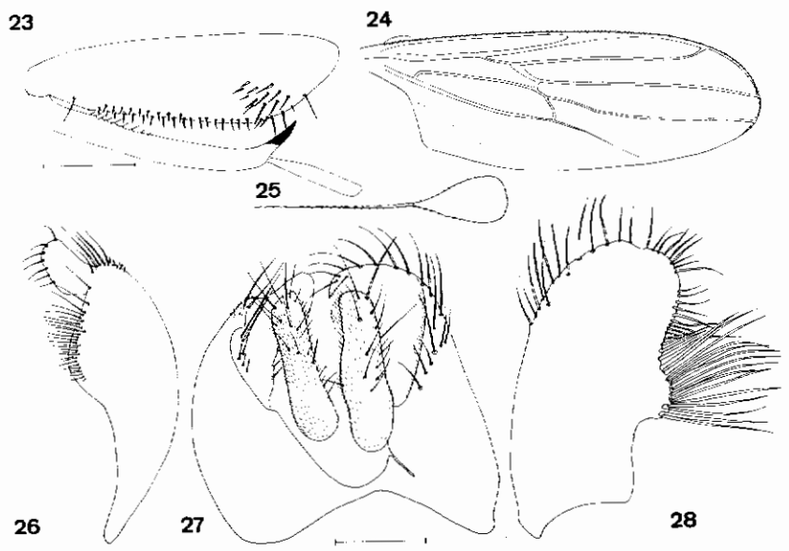
Male

Head. Frons about as broad at base as second antennal segment, distinctly widening above; greyish dusted. Face as broad as frons, silvery dusted. Clypeus probably polished (hidden in holotype). Vertex and occiput greyish dusted, upper part of occiput with short pale hairs becoming longer below. A pair of whitish ocellar bristles, as long as third antennal segment and a pair of slightly longer vertical bristles. Antennae black (Fig. 25); third segment triangular, at least 1.5 times as long as deep; arista almost twice as long as third antennal segment. Palpi hidden in holotype, but in female paratype elongate, pale in ground-colour and with several long pale subterminal bristles.

Thorax black in ground-colour, dusted, except for polished sternopleura. All hairs and bristles pale. Acrostichals tri-quadriserial on a broad median stripe. Dorsocentrals short in front, ending in two pairs of prescutellars. A not very long humeral, two notopleurals (upper one longest) with several short hairs, a postalar, and a pair of scutellars with a short hair on each side.

Legs yellow, but all coxae and trochanters intensively black. Mid femora with a broad black stripe ventrally. Hind femora with a broad central black ring. Metatarsi with a black apical annulation, all other tarsi completely dark brown. Fore femora thickened on basal two thirds with a double row of pale ventral bristles a little shorter than femur is wide. Fore tibiae not very dilated. Mid femora about twice stouter than fore femora, very dilated near base. No distinct anterior bristles; anterior row of ventral spine-like bristles only present in apical half. Spines in posterior row as usual and a little longer than anterior ones. Anteroventrally near base with a patch of long black spine-like bristles (Fig. 23). Pale posteroventral bristles half as long as femur is wide. Mid tibiae with ventral spine-like bristles only in basal half, none in apical half; apically with a large, pointed black spur, much longer than tibia is deep at tip. Spur in ventral view somewhat shovel-shaped. Hind legs slender, femora with some pale hairs ventrally, half as long as femur is wide.

Wings (Fig. 24) clear, with pale veins. A black costal bristle. Veins R 4+5 and M almost parallel. Cross veins separated for a distance as long as upper cross vein. The vein closing anal cell at a right angle. Squamae pale with scattered pale fringes; halteres whitish-yellow.



Figs 23-28. *Platypalpus hemispinosus* sp. nov. paratype male. 23: mid leg; 24: wing; 25: antenna; 26: right periandrial lamella; 27: periandrium; 28: left periandrial lamella. Scale 0.1 mm.

Abdomen shining black, densely set with moderately long whitish hairs. Genitalia as in Figs 26-28. Cerci enclosed in lamellae. Left periandrial lamella with an extension at side bearing rather strong bristles.

Length: body 2.9 mm, wing 2.6 mm.

Female

Closely resembling male, including the thickened mid femora with the peculiar bristling.

Length: body 2.4 mm, wing 2.6 mm.

Type material: Holotype male: Pina de Ebro (Retuerta de Pina, Monegros region), 28.IV.1992 (sweeping on *T. canariensis*). Paratypes: same locality, 2.VI. 1989, 1♀ (sweeping on *R. officinalis*).

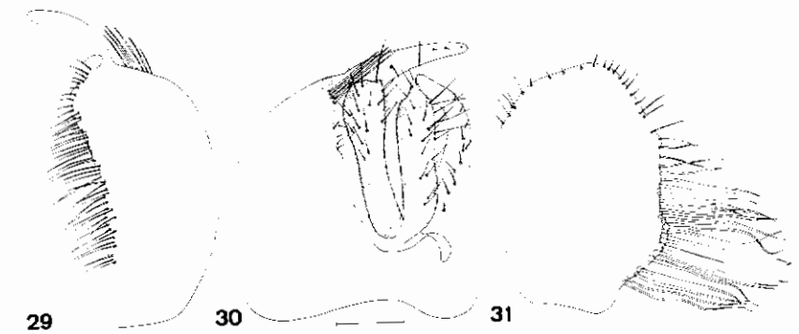
Derivatio nominis: *hemispinosus* alludes to the partly absent ventral spine-like bristles on mid femora and mid tibiae.

***Platypalpus malagonensis* GROOTAERT & CHVÁLA, 1992** (Figs 29-31)

Material examined: Pina de Ebro, 9.VI.1991, 1♂, 1♀ (sweeping on *S. vera* and *T. canariensis*).

There is no significant difference in the structure of the male genitalia of the types and the specimens from Pina de Ebro. The shape and bristling of the left periandrial lamella and the tubercle on the left cercus are quite identical (Fig. 30).

The description of *P. malagonensis* can be completed with following additional characters. The two pairs of vertical bristles have a yellow colour. Acrostichals are long, directed backward, the rows are well separated. Dorsocentrals are twice as long as the acrostichals, a little bristly and indeed ending into two pairs of long prescutellars. The cross veins are contiguous. The hind femora in the specimens from Pina are yellow, in the female the tips have at most a brownish tinge. The couplets in the key of GROOTAERT & CHVÁLA (1992) should read as follows:



Figs 29-31. *Platypalpus malagonensis* GROOTAERT & CHVÁLA male, Pina de Ebro. 29: right periandrial lamella; 30: periandrium; 31: left periandrial lamella. Scale 0.1 mm.

229 (228) - Legs yellow with hind femora contrastingly black on apical half. Palpi rather light brown (females with pale thoracic bristles, see section 241) . . . . . *P. bilobatus* WEBER
- Legs yellow with at most tip of hind femora brownish or darkened. Palpi small, dark brown . . . . . *P. malagonensis* GROOTAERT & CHVÁLA

P. malagonensis was described from 3 males collected in southern Spain. The couple of Los Monegros are the first record since the description. The female (body: 3.6 mm ovipositor extended; wing: 2.4 mm), resembling in most respects the male, is reported for the first time.

General discussion

In all 19 species are now recorded from Los Monegros (Table 1). Compared to Atlantic or central European faunas, this figure seems rather low, but taking the severe climatic conditions into account, the diversity is still surprisingly high. 15 species are true Mediterranean species, five of them are new to science and a more intensive sampling in other regions of Spain will show if these new species are really endemic in Los Monegros or not. Three species are recorded here for the first time since their description: *P. pseudoexiguus* (STROBL, 1909), *P. distichus* GROOTAERT & CHVÁLA, 1992 and *P. malagonensis* GROOTAERT & CHVÁLA, 1992.

Table 1. *Platypalpus* species recorded from Los Monegros: species with Mediterranean (M) or wide western Palaearctic distribution (W).

P. anomalitarsis CHVÁLA & KOVALEV, 1974	M
P. bequaertoides sp. nov.	M
P. blascoi sp. nov.	M
P. chrysonotus (STROBL, 1899)	M
P. distichus GROOTAERT & CHVÁLA, 1992	M
P. hemispinosus sp. nov.	M
P. incertoides GROOTAERT & CHVÁLA, 1992	M
P. javieri sp. nov.	W
P. kirtlingensis GROOTAERT, 1986	M
P. malagonensis GROOTAERT & CHVÁLA, 1992	M
P. monegrensis sp. nov.	M
P. morgei CHVÁLA, 1981	M
P. niveiseta (ZETTERSTEDT, 1842)	M
P. ostiorum (BECKER, 1902)	W
P. pallidiventris (MEIGEN, 1822)	W
P. praecinctus (COLLIN, 1926)	W
P. pictitarsis (BECKER, 1902)	M
P. pragensis CHVÁLA, 1989	M
P. pseudoexiguus (STROBL, 1909)	

Four species have a western Palaearctic distribution: *P. pallidiventris*, *P. praecinctus* and the sister species *P. pictitarsis* and *P. kirtlingensis*. The latter are generally abundant in wheat fields. Parts of Los Monegros have indeed been transformed into fields. *P. pallidiventris* is an eurytopic species in more northern regions and is in Mediterranean regions more abundant at higher altitudes. *P. pragensis* and *P. niveiseta* are considered as being Mediterranean because of their relative abundance in Mediterranean regions and scarcity in temperate regions, as was already discussed above.

From the above data on the *Platypalpus* community composition and the distribution of the species in Europe, we conclude that Los Monegros has 1° a not so poor species diversity considering the harsh environment; 2° a number of very unique (endemic?) species; 3° relatively few eurytopic

species which would point to banalization of the site due to perturbation. This proves that the fly fauna is also quite unique in Europe and that the site is worth a special protection.

References

BRAUN-BLANQUET, J. & BOLOS, O., 1957. - "Les groupements végétaux du bassin moyen de l'Ebre et leur dynamisme". *An. Estac. exp. Aula Dei*, 5 (1-4): 266 pp. Zaragoza.

CARLES-TOLRÁ, M., 1992a. - *Oldenbergiella pappi* sp. n., a new heleomyzid species from Spain (Insecta, Diptera, Heleomyzidae). *Reichenbachia* 29: 195-197.

CARLES-TOLRÁ, M., 1992b. - *Meoneura flavella* sp. n., a new carnid species from Spain (Insecta, Diptera: Carnidae). *Reichenbachia* 29: 193-194.

CARLES-TOLRÁ, M., 1993a. - *Trixoscelis curvata* sp. n.: a new trixoscelidid species from Spain (Diptera). *Annln naturh. Mus. Wien,* 94/95 B: 491-494.

CARLES-TOLRÁ, M., 1993b. - A new *Trixoscelis* species and other material from Spain (Diptera: Trixoscelidae). *Stuttg. Beitr. Naturk. A*, 501 (4): 1-4.

CHVÁLA, M., 1981. - Empididae (Insecta: Diptera) from southern Spain, with descriptions of twenty new species and notes on Spanish fauna. *Steenstrupia*, 7 (6): 113-177.

CONSTANTIN, R., 1991. - Description d'un *Dasytes* nouveau d'Espagne et notes faunistiques sur quelques Dasytinae aragonais (Coleoptera Melyridae). *Nouv. Revue Ent. (N.S.)*, 8 (4): 399-406.

DE BRUYN, L. & BLASCO-ZUMETA, J., 1994. - The chloropid fauna of "Los Monegros", Zaragoza, Spain. Abstracts, 3rd Internat. Congr. Dipterology, Guelph: 52.

DUVIGNEAUD, P. & DENAEYER-DE SMET, S., 1966. - Essai de classification chimique (éléments minéraux) des plantes gypsicoles du Bassin de l'Ebre. *Bull. Soc. r. Bot. Belg.*, 101: 279-291.

GEIGER, W., 1993. - Rediscovery of *Dicranomyia (Glochina) mediterranea* LACKSCHEWITZ & PAGAST, 1942 (Diptera, Limoniidae) in Spain, and neotype designation. *Mitt. schweiz. ent. Ges.*, 66: 9-13.

GROOTAERT, P., 1985. - A note on the phenology of *Platypalpus* MACQUART (Diptera: Empidoidea, Hybotidae) in Belgium using Malaise traps. *Bull. Annls Soc. r. belge Ent.* 121: 99-111.

GROOTAERT, P., 1993. - Faunistics and phenology of *Platypalpus* species in central Mediterranean Spain. *Bull. Annls Soc. r. belge Ent.*, 129: 20-25.

GROOTAERT, P. & CHVÁLA, M., 1992. - Monograph of the genus *Platypalpus* (Diptera: Empidoidea, Hybotidae) of the Mediterranean region and the Canary Islands. *Acta Univ. Carol., Biologica*, 36: 3-226.

KATHIRITHAMBY, J. & KIFUNE, T., 1991. - The first Report of Myrmecolacidae (Strepsiptera: Insecta) from the Palaearctic Region. *Entomologist*, 110(4): 188-192.

MOHRIG, W. & BLASCO-ZUMETA, J., 1992. - New Sciarid flies (Diptera, Sciaridae) from the Monegros region (Zaragoza, Spain). *Misc. Zool.* 16: 93-104.

OCHOA, J.M.J., 1982. - *Relaciones entre el medio y comunidades vegetales del sabinar continental arido en el Valle del Ebro*, INIA, Madrid: 52 pp.

PARDO GONZALEZ, J.E., ISERN VALLVERDU, J. & PEDROCCHI RENAULT, C., 1990. - Contribucion al conocimiento de los Ortopteros (Insecta; Orthoptera) de la Comarca de Los Monegros. *Huesca*: 169-181.

PEDROCCHI, C. & SANZ, M.A., 1991. - El sistema endorréico de Monegros: un ecosistema en vías de extinción. *Lucas Mallada* 3: 93-106.

ROGNES, K., 1993. - First record of the sheep greenbottle fly *Lucilia cuprina* (WIEDEMANN, 1830) from Europe (Diptera: Calliphoridae) with additional Spanish records of Calliphoridae, Muscidae and Sarcophagidae. *Eos*, 69: 41-44.

SERRA, A., 1978. - Contribucion al conocimiento de los Quilopodos de algunas zonas aridas de la Peninsula Iberica, Los Monegros (Aragon). *Miscnea zool.*, IV (2): 31-42.

STARK, A., 1994. - Zum Beutespektrum und Jagdverhalten von Fliegen der Gattung *Platypalpus* (Empidoidea, Hybotidae). *Studia dipterologica* 1: 49-74.

STROBL, G., 1899. - Spanische Dipteren, III. Theil. *Wien. ent. Ztg*, 18: 12-83.

STROBL, G., 1906. - Spanische Dipteren, II. Beitrag. *Mems. R. Soc. esp. Hist. Nat.*, 3: 271-422.

VIVES, J. & VIVES, N., 1978. - Coleopteros halofilos de Los Monegros. *Bol. Asco. esp. Entom.*, 2: 205-214.