



New species and new synonyms in European *Platypalpus* (Diptera: Hybotidae)

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Abstract

Platypalpus mosticensis sp. nov. (Czech Republic) and *P. ibericus* sp. nov. (Portugal) are described and illustrated. The male of *Platypalpus silvahumidus* Barták & Kubík, 2015 is described and illustrated for the first time. Types of all species of *Platypalpus* described by Italian entomologist Gianni Raffone between 2002 and 2010 were studied. The following nine new synonyms are proposed: *Platypalpus canzonerii* Raffone, 2002 = *P. maculimanus* (Zetterstedt, 1842); *Platypalpus litoreus* Raffone, 2010 = *P. flavicornis* (Meigen, 1822); *Platypalpus pseudoalter* Raffone, 2003 = *P. boreoalpinus* Frey, 1943; *Platypalpus pseudostroblii* Raffone, 2002 = *P. exilis* (Meigen, 1822); *Platypalpus subwagneri* Raffone, 2003 = *P. exilis* (Meigen, 1822); *Platypalpus romaniolus* Raffone, 2010 = *P. longiseta* (Zetterstedt, 1842); *Platypalpus subarticulatus* Raffone, 2002 = *P. articulatus* Macquart, 1827; *Platypalpus submaculus* Raffone, 2002 = *P. macula* (Zetterstedt, 1842); *Platypalpus subpectoralis* Raffone, 2002 = *P. pectoralis* (Fallén, 1815). Variability in the male genitalia of *P. boreoalpinus* is discussed.

Key words: Empidoidea, *Platypalpus*, taxonomy, new species, new synonyms, Europe

Introduction

The genus *Platypalpus* Macquart, 1827 (Hybotidae: Tachydromiinae) (Sinclair & Cumming 2006), is a megadiverse genus with more than 600 species described worldwide (Yang *et al.* 2007, 2010; Grootaert 2008; Huo *et al.* 2010; Grootaert & Shamshev 2006, 2012, 2014; Yang & Li 2011; Shamshev & Grootaert 2012; Grootaert *et al.* 2012; Kustov & Shamshev 2014, 2015; De Freitas-Silva & Ale-Rocha 2013; Barták & Shamshev 2015; Barták & Kubík 2015). The genus has been extensively studied mainly in the Palearctic Region, where about 370 species are currently known, but the majority of them (263) have been recorded from Europe including the Mediterranean and some adjacent territories, Caucasus, and Turkey.

The ecologically opportunistic predatory behavior enables many species to occupy even drastically disturbed habitats, for example agricultural fields or home gardens where they often represent the commonest members of Empidoidea with supposed impact on natural pest control.

In the present study two new species recently discovered from Portugal and Czech Republic are described and the species of *Platypalpus* described by Raffone (2002a, b, c, 2003a, b, 2010) are reviewed.

Material and methods

Italian entomologist, Gianni Raffone, described altogether nine species of *Platypalpus* (Raffone 2002a, b, c, 2003a, b, 2010). Because of clear inadequacies of his descriptions and previous condemnation of his identification skills (Rognes 2015), we borrowed and studied all available type material of these species. The material studied is deposited in the following collections: Czech University of Life Sciences Prague (CULSP), Museo di Storia Naturale, Venezia (MSNV), Museum of Natural History in Morbegno (Sondrio) (MNHM), and State Forestry (Laboratory of Bosco Fontana - Mantova) (NRBF).

Some specimens preserved originally in alcohol were dried and mounted by the method described by Barták (1997). According to this method, flies are put into three successive solutions for 12–24 hours each: 1st - formalin (40 % water solution of formaldehyde) + 96 % ethylalcohol (1:1 to 1:3), 2nd - 96 % ethylalcohol + ethylacetate (1:1) and 3rd - pure ethylacetate. From the solution three, flies are transferred by means of soft tweezers onto a piece of cardboard and wings and legs, if necessary, are stretched adding additional drop of ethylacetate. After some half hour of drying, flies are mounted on cards.

Additions to descriptions refer to (re-)descriptions in Collin (1961), Chvála (1975), Chvála (1989), or Grootaert & Chvála (1992) if not stated otherwise.

Genitalia preparations: genitalia together with 2–3 pregenital segments were removed from the rest of body by means of small scissors and macerated in potassium hydroxide solution (approx. 10%) in small vials submerged into a cup of hot water for 1–2 hours. After neutralizing with 8% acetic acid, the genitalia were dissected in glycerin and parts (right and left epandrial lamellae in lateral views and cerci in dorsal view) were photographed by means of an Olympus E-41 digital camera mounted on an Olympus BX51 compound microscope and images were edited with the computer software Quick Foto micro 2.3 provided with Deep focus 3.1. Each image resulted usually from combining 7–15 layers. To prevent movement of genitalia during shooting, a thin layer of Fenistyl gel was added to the slide and put several drops of glycerin on this layer. Images were improved by means of Adobe Photoshop and they served as models for outline of hand drawn illustrations; details were added by directly observing genitalia. Hand drawings were exported by means of a computer vector program.

The morphological terms used here follow Merz & Haenni (2000), Sinclair (2000) and Sinclair & Cumming (2006). All body measurements (including body and setae length) were taken from dry specimens (therefore the actual length may differ) by means of ocular micrometer with a Nikon SMZ 1500 binocular microscope. Male body length was measured from antennal base to the tip of the genitalia and female body length from the base of antennae to the tip of the cerci.

Taxonomic account

Platypalpus Macquart, 1827

For full generic synonymy and diagnosis see Barták & Kubík (2015).

Platypalpus ibericus sp. nov.

(Figs 1–4)

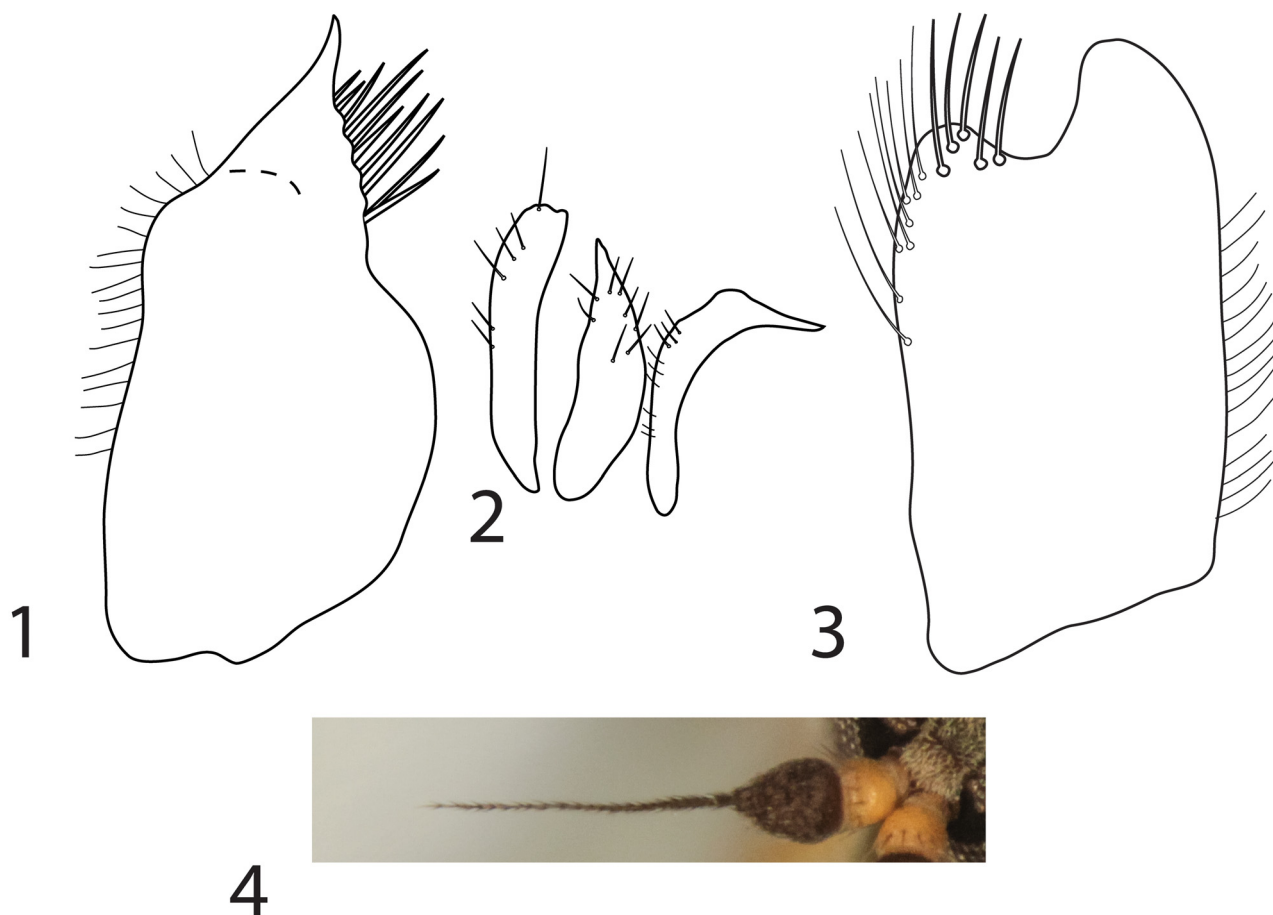
Type material. HOLOTYPE: ♂, labelled: “PORTUGAL, 7 km E of Manteigas, nr. river, 580 m, sweeping, 40°24'42"N, 7°28'04"W, 23.v.2008, M. Barták” (CULSP). PARATYPES: 5 ♂, 10 ♀, same data as holotype; 1 ♀, Portugal, 5 km N of Formalicao, *Castanea* wood, sweeping, 40°28'31"N, 7°21'32"W, 930 m, 23.v.2008, M. Barták (CULSP).

Diagnosis. Brown and heavily microtrichose species with 1 pair of vertical setae; antennae with both basal segments yellow, postpedicel short broad and black; acrostichals quadiserial; katepisternum with narrow vertical lustrous spot, legs yellow, mid tibia without apical spur.

Description. **Male.** **Head** black, brownish grey microtrichose including clypeus. Frons » 0.07 mm broad just above antennae and » 0.10 mm broad in the level of front ocellus. Face » 0.07 mm broad and nearly parallel sided. Gena narrow and lustrous. Antenna with basal segments yellow, postpedicel black, 1.4X longer than broad, stylus 2.5X longer than postpedicel. Palpus yellow, strip like with distinct tip, and long (about 2/3 as long as proboscis), with one strong but not very long subapical yellow to brownish yellow seta and with several additional shorter yellow setae. Ocellar setae brown and short (0.12 mm), posterior pair scarcely half as long. A single pair of brown to black vertical setae (» 0.16 mm) inserted wide apart (» 0.23 mm). Occiput brown to brownish yellow setose dorsally and yellow (but not much longer) setose ventrally. Proboscis half as long as head, brownish black. **Thorax** brown, rather light brownish grey microtrichose, katepisternum with narrow (= vertically oriented) lustrous spot. Large thoracic setae brownish, sometimes anterior ones (postpronotal, anterior notopleural, lateral scutellar) white,

small setae pale brown (acrostichals, dorsocentrals) to white (lateral parts of mesoscutum). Chaetotaxy: postpronotal seta (one specimen with two setae) rather long and mostly white; acrostichals broadly quadriserial and short (≈ 0.06 mm in middle of rows), about 15 setae in one row; dorsocentrals equally short, irregularly biserial anteriorly (with several hairs laterally on mesoscutum) and nearly uniserial posteriorly, last two pairs strong and long; notopleuron with 2 long setae inserted wide apart; 1 long postalar and 1 long and one much shorter pair of scutellars. **Wing** clear, veins yellow in basal part and somewhat darker apically. Veins R_{4+5} and M_1 only slightly bowed. Crossveins contiguous. Vein Cu distinctly S-shaped and recurrent, basal part of anal vein clearly visible. A single short yellow to brown costal seta. Squama grey with pale fringes. Halter yellow with brownish stem. **Legs** yellow with only usual small dark spots on all trochanters and mid and hind knees, mid and hind coxae very slightly darkened, last 1–2 (3) tarsal segments distinctly darkened, no annulations. Fore femur thickened, ventrally with short and fine pilosity, and with yellow setae dorsally and posteriorly slightly shorter than depth of femur. Fore tibia slightly thickened and short setose, with several short dark setae antero- and posterodorsally. Mid femur only very slightly deeper than fore femur (≈ 0.21 mm broad at broadest point), ventrally with usual two rows of spine-like setae, anterior row consists of short spines and posterior consists of much longer setae proximally (up to 0.10 mm long) becoming shorter more distally, and with 2–3 preapical anterior and anteroventral and one preapical postroventral seta(e), no posteroventral setae. Mid tibia without apical spur. Hind legs without conspicuous setation. **Abdomen** brown, tergites 2–6 lustrous dorsally and with transverse band of microtrichosity anteriorly which may be broader on tergite 6, lateral margins microtrichose, segment 8 partly lustrous including proximal parts of genital lamellae, sternites and distal parts of genital lamellae microtrichose. Abdomen sparsely covered with white setae. Genitalia (Figs 1–4) with left epandrial lamella deeply split apically (Fig. 3); right epandrial lamella (Fig. 1) fine setose ventrally and with sharply tipped surstylus; cerci (Fig. 2) digitiform, left one with long ventrally bent apical process (Fig. 2 right). **Female**. Practically identical to male except usual differences in terminal abdominal segments. Segment 8 conspicuously enlarged. **Length**: body 2.1–3.8 mm, wing 2.0–2.9 mm.

Etymology. The name is derived from the Iberian Peninsula where the species was collected.



FIGURES 1–4. *Platypalpus ibericus* sp. nov. 1, right epandrial lamella; 2, cerci; 3, left epandrial lamella; 4, antenna.

Distribution. Portugal.

Remarks. The species described above is very similar to *P. montenegrensis* Bequaert, leading to the same point in the key by Grootaert & Chvála (1992). The position of both species in groups delimited by Chvála (1975) is unclear. *Platypalpus montenegrensis* was assigned by Grootaert & Chvála (1992) close to the *P. ciliaris* group, however, in keys to species groups (Chvála 1975; Grootaert & Chvála 1992) both species lead almost exactly to the *P. hackmani* group. Differences between both species are given in Table 1. Moreover, despite the thorax of the holotype of *P. montenegrensis* (studied by the senior author) being covered in glue masking the microtrichia, the katapisternum appears to be entirely microtrichose.

TABLE 1. Comparison of *Platypalpus ibericus* sp. nov. and *P. montenegrensis*.

	<i>P. ibericus</i> sp. nov.	<i>P. montenegrensis</i>
Abdominal sternites	Entirely microtrichose	Mostly lustrous
Left epandrial lamela	V-shaped split apically	Triangle-shaped
Lateral parts of abdominal tergites 3–4	Broadly microtrichose	Lustrous
Midtibial spur	Practically absent	Small but distinct (about 0.04 mm long)
Right surstylus	Sharply tipped	Ovate at tip

***Platypalpus mosticensis* sp. nov.**

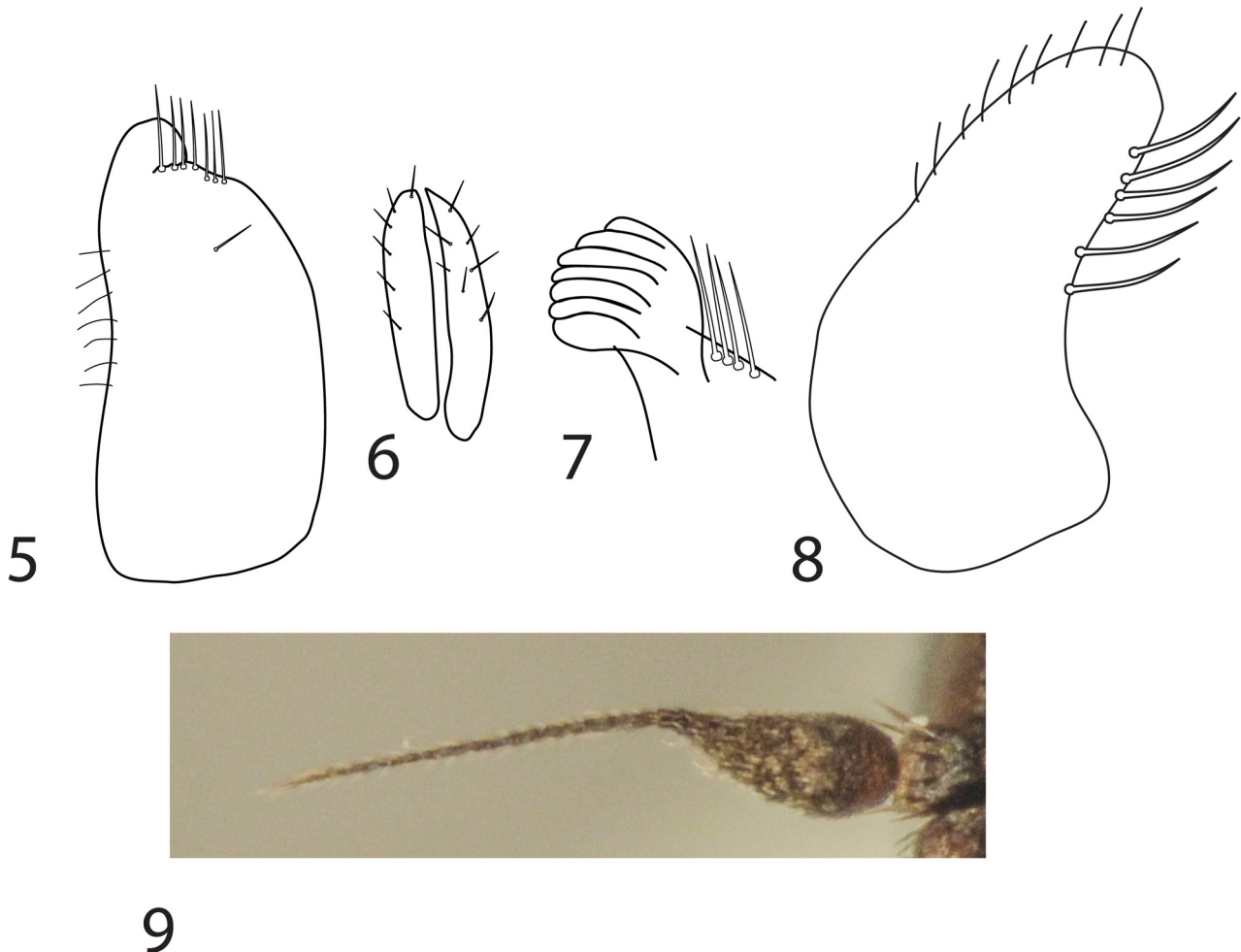
(Figs 5–9)

Type material. HOLOTYPE: ♂, labelled: “CZECH REPUBLIC, Sázava—5 km N, damp meadow, 49°55'N, 14°55'E, 16.vi.1990, M. Barták” (CULSP). PARATYPES: 1 ♂, 4 ♀, same data as holotype (CULSP).

Diagnosis. A small black and lustrous species with 1 pair of vertical setae, antenna black, lustrous mesoscutum, katapisternum and anepisternum, legs black, mid femur with pale posteroventrals; very long and sharply pointed apical spur on mid tibia.

Description. **Male.** **Head** black, frons (except microtrichose lowermost part), ocellar triangle and small triangular spot on vertex (behind ocellar triangle) lustrous, face microtrichose. Frons » 0.06 mm broad just above antennae and ≈ 0.10 mm broad in the level of front ocellus. Face ≈ 0.04 mm broad at middle (at the narrowest point). Clypeus lustrous. Gena rather wide and lustrous. Antenna black, postpedicel 2.0–2.4X longer than broad, stylus 1.6–2.2X longer than postpedicel. Palpus brown, ovoid, and very short (about 1/3 as long as proboscis), with several long white to brownish setae. Ocellar setae black and short (≈ 0.10 mm), posterior pair scarcely half as long. A single pair of brown to black vertical setae (≈ 0.15 mm) inserted wide apart (≈ 0.20 mm). Occiput light grey microtrichose, sparsely and black setose dorsally and long white setose ventrally. Proboscis half as long as head, brownish black. **Thorax** black; lustrous parts: mesoscutum including postpronotum, anepisternum (ventrally extending to fore coxa but except dorsal narrow microtrichose strip), katapisternum (lustrous part broadly connected with lustrous part of anepisternum, leaving only very narrow dorsal microtrichose strip); microtrichose parts: narrow ventral strip on notopleuron (ventrad from setae), postalar calli and scutellum. Large thoracic setae including acrostichals and dorsocentrals black or at least very dark brown, hairs on proepisternum, fore coxa and squama mostly white, hairs on wing mostly dark including small costal seta, legs with mixed dark and pale setae. Chaetotaxy: postpronotal seta rather short but distinct (about 2X longer than acrostichals or dorsocentrals); acrostichals broadly biserial and rather long (≈ 0.10 mm in middle of rows), about 10–12 setae in one row; dorsocentrals equally long or slightly longer, uniserial, about 10 setae in one row, last pair strong and long (about as long as apical scutellars) and inserted conspicuously wide apart (near margins of scutellum); notopleuron with 1 long black seta on posterior part and with one to several additional smaller and paler seta(e); 1 short postalar and 2 to 3 pairs of scutellar setae. **Wing** clear with dark brown veins. Veins R₄₊₅ and M₁ only slightly bowed and almost parallel. Crossveins separated. Vein Cu almost straight and slightly recurrent, basal part of anal vein depigmented but visible. Costal seta short, black. Squama brown with pale fringes. Halter pale yellow except brownish basal part, stem dark brown. **Legs** black, only front knees and all tarsi at least partly brown. Tarsi with only very indistinct annulations. Fore femur slightly thickened, with two ventral rows of pale setae about half as long as depth of femur. Fore tibia narrow and short setose. Mid femur thickened (» 0.23 mm broad at broadest point, i.e.

1.4X broader than fore femur), with rather short and sparse pale posteroventrals. Mid tibia with very long sharply pointed apical spur. Hind legs thin, without conspicuous setation. **Abdomen** black and entirely lustrous, without any microtrichosity, sparsely covered with setae appearing white on the lustrous black background but brown against white background, these setae are longer on last 3 tergites. Genitalia (Figs 5–8): left epandrial lamella (Fig. 8) slightly bowed, with about 10 setae ventrally (not all illustrated); cerci (Fig. 6) simple and digitiform, subequal; right epandrial lamella (Fig. 5) subrectangular, surstylus ovoid with distinct longitudinal ridges (Fig. 7). **Female.** Practically identical with male except last abdominal segments. Abdomen lustrous, last two segments microtrichose except narrow lustrous stripe dorsally on 8th sternite. **Length:** body 2.7–3.0 mm, wing 2.5–2.9 mm.



FIGURES 5–9. *Platypalpus mosticensis* sp. nov. **5**, right epandrial lamella; **6**, cerci; **7**, right surstylus; **8**, left epandrial lamella; **9**, antenna.

Etymology. The species is named after the type locality bearing local name “Moštice”.

Distribution. Czech Republic.

Remarks. The species described above belongs to the *P. minutus* group and it should be compared with other black *Platypalpus* spp. with a single vertical seta, black antennae, black legs, long and sharp midtibial spur and lustrous anepisternum: *P. ater* (Wahlberg), *P. niger* (Meigen), and *P. nigricolor* Merz & Chvála. However, the latter two species have proximal parts of all femora yellow and frons, ocellar triangle, and vertex microtrichose. *Platypalpus ater*, known from North Europe, sharing with *P. mosticensis* sp. nov. black legs and lustrous frons, has postpedicel shorter (about 1.5–1.9X longer than wide), stylus slightly longer (2–3X longer than postpedicel), large thoracic setae white and postpronotum including frontmost part of mesoscutum (between postpronotal calli) microtrichose. Moreover, genitalia of both species are different, compare Figs 5–8 with figs 386–388 in Chvála (1975); e.g. the whole genitalia are very large and long in *P. ater* (being nearly as long as the whole abdomen), but short in *P. mosticensis* sp. nov. In addition, both right cercus and right surstylus are sharply tipped in *P. ater*, but

rounded in *P. mosticensis* **sp. nov.** Female abdominal segment 8 is elongated in *P. ater* (being at least 3X longer than preceding one) but subequally long in *P. mosticensis* **sp. nov.**

The newly described species leads to couplet 69 in the key by Grootaert & Chvála (1992), but also couplet 68 should be corrected because it erroneously states “Pleura dusted except for polished katapisternum”. The couplets 68–69 should be corrected as follows:

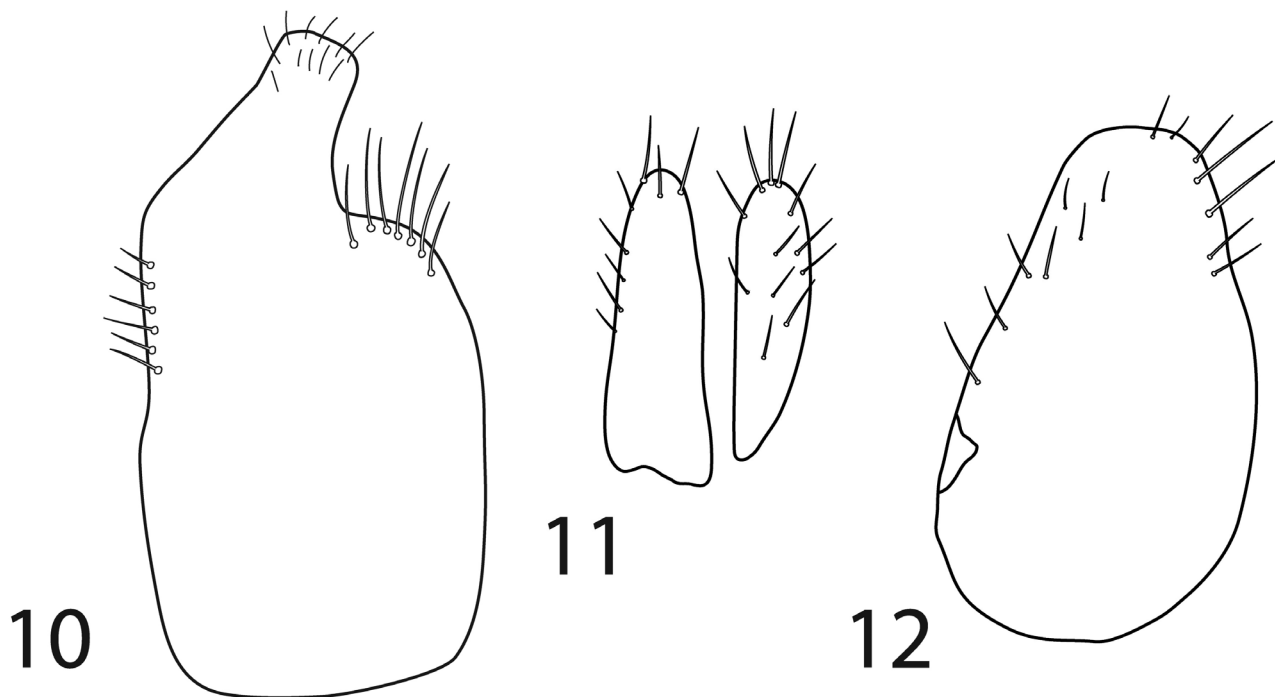
- 68 (58) Legs mostly black, only tibia dark brown. Larger species (body about 2.5 mm) 69
 - Fore coxa and base of all femora largely yellow. Smaller species, body at most about 2 mm in length 70
 69 (68) Anepisternum microtrichose. Stylus about as long as postpedicel *cinereovittatus* (Strobl)
 - Anepisternum lustous. Stylus at least 1.5X longer than postpedicel 69a
 69a (69) Large thoracic setae white. Postpronotum including the anterior part of mesoscutum microtrichose. Crossveins contiguous to narrowly separated. ♂: genitalia very large and almost as long as abdomen; right cercus and right surstylus sharply tipped. ♀: abdominal segment 8 3X longer than segment 7. *ater* (Wahlberg)
 - Large thoracic setae brown to black. Postpronotum including the anterior part of mesoscutum lustous. Crossveins widely separated. ♂: genitalia short; right cercus and right surstylus rounded apically. ♀: abdominal segment 8 subequally long as segment 7 *mosticensis* **sp. nov.**

***Platypalpus silvahumidus* Barták & Kubík**

(Figs 10–12)

Platypalpus silvahumidus Barták & Kubík, 2015: 6.

Material examined. Czech Republic. 1 ♂, Bohemia centr. (5857b), Hradčany, PP Bář, 6–20.v.2003, Malaise trap, B. Mocek; 1 ♀, Bohemia centr. (5857), NPR Žehuňská obora, slínoviště, stráně [= marl hillside], 6.v.2003, B. Mocek (CULSP).



FIGURES 10–12. *Platypalpus silvahumidus* Barták & Kubík, 2015. **10**, right epandrial lamella; **11**, cerci; **12**, left epandrial lamella.

Redescription. Male. Very similar to female (see original description) except usual sexual differences in terminal abdominal segments. The only male at our disposal lost its head, scutellum bears an additional small subbasal seta (third pair) and legs are paler yellow with only last segments of hind tarsi darkened on apical 3–4 segments. Abdomen entirely lustous including genital lamellae. Genitalia (Figs 10–12): left epandrial lamella

(Fig. 12) ovoid, with several short setae both dorsally and ventrally and with small subbasal dorsal constriction (not visible in lateral view); right epandrial lamella (fig. 10) with rather square-shaped surstylus; cerci (Fig. 11) digitiform. **Length:** wing 2.3 mm.

Distribution. Czech Republic.

Remarks. The holotype of this species is female in spite erroneously marked as male in the original description.

New synonyms

Species are arranged alphabetically according to their original names

Platypalpus canzonerii Raffone

Platypalpus canzonerii Raffone, 2002a: 79.

Type material examined. **HOLOTYPE** ♂, labelled: “Morbegno (Sondrio), River Fiume Adda, 5.VIII.1993, legit Canzoneri” [genitalia dissected] (MNHM). **PARATYPES:** same data as holotype (1 ♂, 1 ♀) (MNHM).

Notes on type material. The male holotype is badly damaged (without head, right fore leg and left mid leg) with genitalia in a plastic microvial and it is a specimen of *P. maculimanus* (Zetterstedt) despite absence of fore leg tarsus annulations (illustrated by Grootaert & Chvála 1992, fig. 212), which was probably caused by immaturity or preceding maceration in alcohol. Genitalia of this specimen exactly, even in all small details (shape of cerci), agrees with *P. maculimanus* in Grootaert & Chvála (1992, figs 214–217). Comparing the terminalia of the holotype with Raffone (2002a, figs 1–3) reveals inadequacies in Raffone’s (l.c.) figures: long and strong setae on tip of right epandrial lamella are omitted in his fig. 1, shape of right cercus is different (depicted as narrowed apically) from the original specimen (where it is broadened apically) and also shape of left epandrial lamella was peculiarly illustrated by Raffone (l.c.). The male paratype is well preserved and is clearly a male of *P. maculimanus*. The female paratype is also damaged (lacking left fore leg and three apical tarsomeres of right fore leg, lacking left hind leg and apical four tarsomeres of left mid leg) and represents a female of *P. articulatus* Macquart (see also discussion under *P. subarticulatus* Raffone, 2002). Although Grootaert & Chvála (1992) stated: “It is very difficult to distinguish the females of *P. articulatus* and *P. maculimanus*. Positive identification is only reliable with males”, we believe that their mutual recognition is possible according to microtrichosity pattern of the abdomen. Females of *P. articulatus* have abdominal tergites 3–5 entirely microtrichose laterally, whereas females of *P. maculimanus* have abdominal tergites 3–5 lustrous laterally, bearing at most narrow anterior stripe of microtrichosity. Moreover, the former species has slightly narrower lustrous spot on the katapisternum.

Remarks. Characters of *P. maculimanus* not previously mentioned in descriptions and specified here include: postpedicel up to 3X longer than broad; fore leg in some specimens darkened, especially fore femur posteriorly and sometimes also fore tibia brownish.

Platypalpus canzonerii is considered a new junior synonym of *P. maculimanus*.

Platypalpus litoreus Raffone

Platypalpus litoreus Raffone, 2010: 45.

Type material examined. **HOLOTYPE** ♂, labelled: “Casale Borsetti (Ravenna), Boschetto Sud, 15-IV-1978 / Paratypus ♀ [SIC!]/ *Platypalpus litoreus* n.sp. det. Raffone G. 2009” [genitalia dissected] (MSNV). **PARATYPES:** same data as holotype (2 ♀) (MSNV).

Notes on type material. The holotype is well preserved (only left hind leg missing) with genitalia in a plastic microvial. It is a specimen of *P. flavicornis* (Meigen). Genitalia agrees in all details with *P. flavicornis* including small subbasal incision on dorsal side of left epandrial lamella depicted by Chvála (1975, figs 480–482) but omitted by Raffone (2010, fig. 5). Ventral setae on left epandrial lamella illustrated as very short by Raffone (l.c.,

fig. 6) are in fact very long (almost as in fig. 482 in Chvála, 1975). However, Chvála's (l.c.) figures (figs 481 and 482) differ slightly from several specimens we studied: right cercus depicted as broad at base is in fact narrow (broader appearance is given by dorsally slightly bulging part of subepandrial sclerite). The first paratype female (erroneously labelled as male) is well preserved and it is a specimen of *P. pallidicornis* (Collin). The second female paratype is well preserved (with only left mid leg missing) and it is *P. pallidicornis*.

Remarks. Characters of *P. flavicornis* beside those mentioned in several descriptions and specified here include: proepisternum with a single long pale downcurved seta; mid femur with pale anterior seta one third before tip (similar to *P. pallidicornis*). Width of frons (measured in middle) and distance between vertical setae are overlapping: the former character in *P. pallidicornis* being between 0.05–0.09 mm and 0.08–0.11 in *P. flavicornis*, the latter being between 0.14–0.18 mm in *P. pallidicornis* and 0.16–0.19 in *P. flavicornis*. In the holotype of *P. litoreus*, these measures are: 0.10 and 0.17 mm, respectively. Characters distinguishing both species are given in Table 2. *Platypalpus litoreus* is considered a new junior synonym of *P. flavicornis*.

TABLE 2. Characters differentiating between *P. flavicornis* and *P. pallidicornis*.

<i>P. pallidicornis</i>	<i>P. flavicornis</i>
Lustrous spot on katepisternum asymmetrical and broader than microtrichose posterior margin	Lustrous spot on katepisternum almost symmetrical and narrower than microtrichose posterior margin
Male: abdominal tergites 5–7 usually with narrow microtrichose strip anteriorly	Male: abdominal tergites 5–7 usually broadly microtrichose laterally
Male: last segment of fore tarsi yellow to brownish yellow, with rounded black spot ventrally	Male: last segment of fore tarsi nearly entirely black with the exception of yellowish basal 1/4–1/5
Male: midtibial spur shorter than tibial depth and blunt	Male: midtibial spur longer than tibial depth and sharp
Male: left epandrial lamella with conspicuous and sharp ventral tooth (exceeding lower margin of lamella by 0.06 mm); right surstylus long and narrow, almost 4X longer than wide	Male: left epandrial lamella with only shallow ventral bulge (exceeding lower margin of lamella by 0.03 mm); right surstylus short and broader, about 2.5X longer than wide
Female: abdominal tergites 4–5 mostly lustrous	Female: abdominal tergites 4–5 mostly microtrichose on sides

Platypalpus pseudoalter Raffone

Platypalpus pseudoalter Raffone, 2003a: 97.

Type material examined. **HOLOTYPE** ♂, labelled: “ITALY—Parma—Riserva Naturale Gueadine Pradaccio, 18/VII—7/VIII/2001 legit Lab. Bosco Fontana, Malaisetrapp sentiero State Forestry Corps—NRBF coll. / Holotypus ♂ / *Platypalpus pseudoalter* n. sp. det. Raffone G. 2001” [genitalia dissected] (NRBF). **PARATYPE:** same data as holotype (1 ♀) (MSNV).

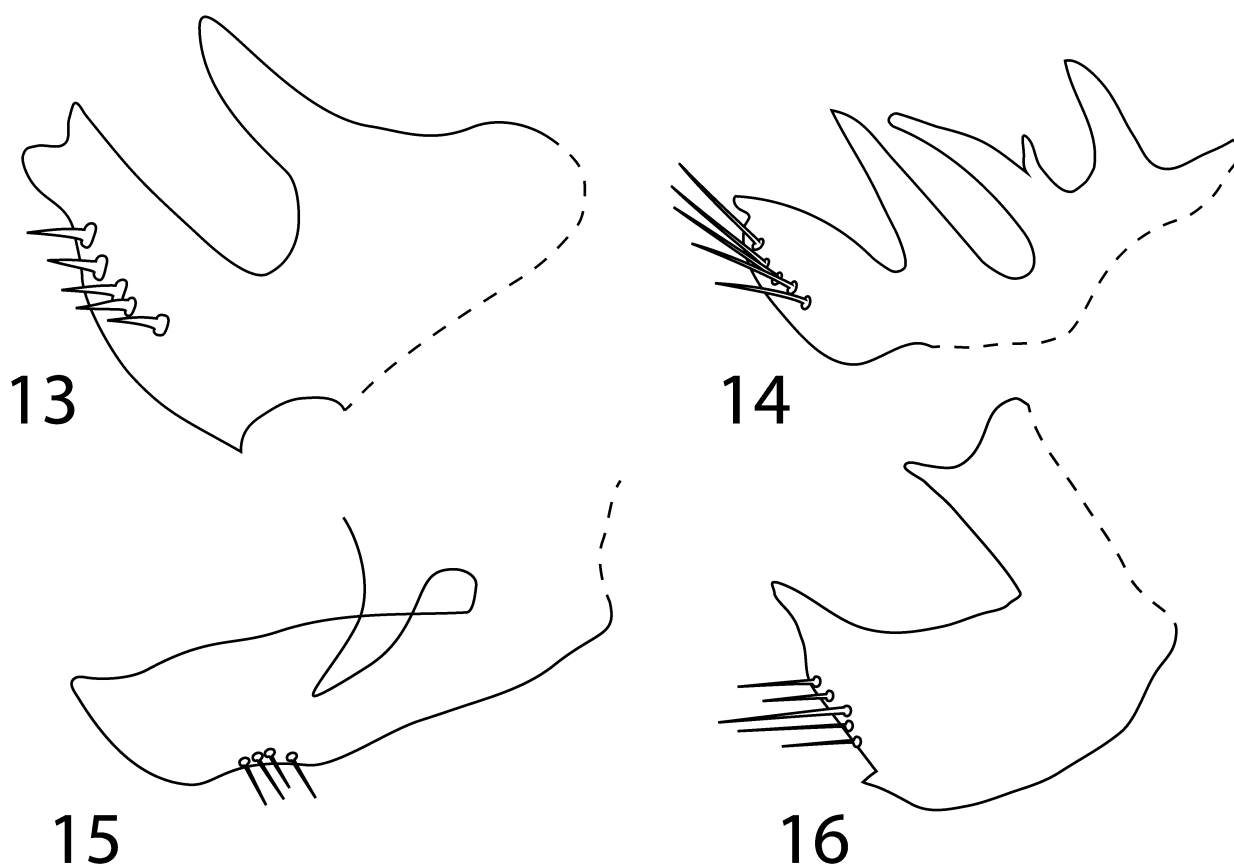
Notes on type material. The male holotype is well preserved (only left mid leg missing), with dissected genitalia, originally stored in alcohol but during this study was dried and mounted on a card. It is a male of *P. boreoalpinus* Frey. The peculiar shape of left cercus illustrated by Raffone (2003a, fig. 5) was caused by depicting the cercus together with parts of the subepandrial sclerite (compare with fig. 321 in Chvála 1975). This mistake was probably caused by incomplete clearing of the genitalia.

The female paratype is terribly damaged (head, thorax, right hind leg and abdomen separated and glued on a card, thorax only with left legs, mid leg without tarsi, both wings and right halter absent, thorax slightly damaged). It is a specimen of *P. boreoalpinus*: all structures present are identical with this species including peculiarly shaped abdominal sternite 8 with pronounced lustrous tip (Raffone 2003a, fig. 8, with incorrect figure legend referring to male genitalia).

Remarks. Characters of *P. boreoalpinus* not previously mentioned in descriptions and specified here include: face very narrow in middle, almost linear (0.02 mm wide); postpedicel with subapical group of rather long setulae (about 0.03 mm long), variable in colour from almost entirely dark to yellow (both holotype and paratype of *P. pseudoalter* have postpedicel entirely yellow); compound eyes swollen ventrally and anteriorly, so they are distinctly kidney shaped, with lower facets slightly enlarged; katepisternum lustrous, with only lower part and

narrow hind margin microtrichose; basal part of anal vein and apical part of vein CuP scarcely visible, almost absent; last tarsomere entirely dark but often one or two penultimate tarsomeres also darkened, more often on mid and hind legs. Female sternite 8 lustrous dorsally, with pronounced dorsal posterior corner. Male genitalia are extremely variable but all forms described below have one shared feature typical for this species: presence of finger-like extension of subepandrial sclerite, merging into a hollow in dorsal part of left epandrial lamella (depicted by Chvála 1975, fig. 321). Ventral setae on left epandrial lamella are about 1/3 as long as lamella is high in some specimens but almost as long as lamella is high in other specimens. Right surstylus and left cercus are extremely variable. Commonly (form A): the right surstylus is deeply bifurcated, interoventral arm being narrowly digitiform and interodorsal arm broader, slightly concave apically, with one corner sharp tipped and the other rounded (rarely both tips are sharp—as in Fig. 13); left cercus has elongated polished and bent tip. Other specimens (form B) have left cercus simple, broader or narrower (or even with small ventral projection) and right surstylus twice bifurcated (i.e. interoventral arm bears four digitiform processes—as in Fig. 14). Still another specimen (form C, from Grossglockner) has broader arm of right surstylus with rather long setae in middle of its apical part (Fig. 16). Holotype of *P. pseudoalter* is most similar to form A: left cercus has elongated and bent tip and right surstylus is deeply bifurcated with interoventral arm narrowly digitiform and the broader arm nearly rectangular with only one of the outer corners slightly sharpened (Fig. 15). All forms are interpreted here as variability of the single species.

Platypapus pseudoalter Raffone 2003 is considered a new junior synonym of *P. boreoalpinus* Frey, 1943.



FIGURES 13–16. *Platypalus boreoalpinus* Frey, 1943, right surstylus. **13**, specimen from Beskydy Mts (Czech Republic); **14**, specimen from Krkonoše Mts (Czech Republic); **15**, holotypus of *P. pseudoalter* Raffone, 2003; **16**, specimen from Grossglockner (Austria).

***Platypalus pseudostroblii* Raffone**

Platypalus pseudostroblii Raffone, 2002b: 36.

Type material examined. HOLOTYPE ♀, labelled: “ITALY—Parma—Riserva naturale Guadine-Pradaccio, 18.VII-7.VIII.2001 legit Lab. Bosco Fontana, Malaisetrapp sentiero State Forestry Corps—NRBF coll. / Holotypus ♀ / *Platypalpus pseudostroblii* n. sp. det. Raffone G. 2001” (NRBF).

Notes on type material. Well preserved female holotype was stored in alcohol and during this study it was dried and mounted on a card. It is a specimen of *P. exilis* (Meigen). See also discussion under *P. subwagneri*.

Platypalpus pseudostroblii is considered a new junior synonym of *P. exilis*.

***Platypalpus romaniolus* Raffone**

Platypalpus romaniolus Raffone, 2010: 44.

Type material examined. HOLOTYPE ♂, labelled: “Casale Borsetti, (Ravenna), Boschetto Sud, 15.IV.1978 / *Platypalpus romaniolus* n. sp. Det. Raffone G. 2009 / Holotypus ♂” [genitalia dissected] (MSNV). **PARATYPE** ♀ labelled: “Casale Borsetti, (Ravenna), Boschetto Sud, 19-IV-1978 / *Platypalpus romaniolus* n. sp. Det. Raffone G. 2009 / Paratypus ♀” (MSNV).

Notes on type material. Both holotype (well preserved, only right antenna missing, genitalia dissected, stored in plastic microvial) and paratype (without left fore and mid legs and right tibia) are specimens of *P. longiseta* (Zetterstedt).

Platypalpus romaniolus is considered a new junior synonym of *P. longiseta*.

***Platypalpus subarticulatus* Raffone**

Platypalpus subarticulatus Raffone, 2002c: 3.

Type material examined. HOLOTYPE ♀, labelled: “Litorale Veneto, Lido Jesolo, A. Giordani Soika / 5-VI-62 / Dune Schoenetum / *Tachydromia* sp. n. nr. articulata / *Platypalpus pseudoarticulatus* [SIC!] n. sp. det. Raffone G. 2000 / Holotypus ♀ / Museo Civico di Storia Naturale de Venezia Materiale tipico descritto Inv. n. 05076” (MSNV).

Notes on type material. The holotype is well preserved (only last segment of left hind tarsus and last four segments of right hind tarsus missing) and it is a specimen of *P. articulatus*.

Platypalpus subarticulatus is considered a new junior synonym of *P. articulatus*.

***Platypalpus submaculus* Raffone**

Platypalpus submaculus Raffone, 2002b: 37.

Type material examined. HOLOTYPE ♂, labelled: “ITALY—Parma—Riserva naturale Guadine-Pradaccio, 18.VII-7.VIII.2001 legit Lab. Bosco Fontana, Malaisetrapp sentiero State Forestry Corps—NRBF coll. / Holotypus ♂ / *Platypalpus submaculus* n. sp. det. Raffone G. 2001” [genitalia dissected] (NRBF).

Notes on type material. Holotype is well preserved (only left hind leg missing), stored in ethanol, but during this study was dried and mounted on a card. It is a specimen of *P. macula* (Zetterstedt). Although Raffone (2002b) described the postpedicel as yellow, it is in fact brown, not much paler than both basal segments.

Remarks. Characters of *P. macula* not previously correctly described and specified here include: face lustrous; gena narrow and lustrous; palpus with rather long setae also along its base; katapisternum lustrous up to extreme anterior and posterior margins; postpronotum without strong seta but often with 1–3 setae distinctly longer (but not stronger) than remaining ciliation. Genitalia illustrated by Chvála (1975, figs 274–275), he only overlooked small dorsoapical finger-like projection on left epandrial lamella (correctly recognized by Raffone 2002b); right surstylus long, with broadened basal part and narrower apical part and with small spine-like internal projection on base of narrow part; left cercus with two tips apically, one directed ventrally (in lateral view it looks like crayfish claw).

Platypalpus submaculus is considered a new junior synonym of *P. macula*.

***Platypalpus subpectoralis* Raffone**

Platypalpus subpectoralis Raffone, 2002b: 38.

Type material examined. HOLOTYPE ♀, labelled: “ITALY—Parma—Riserva naturale Guadine-Pradaccio, 18.VII–7.VIII.2001 legit Lab. Bosco Fontana, Malaisetrapp sentiero State Forestry Corps—NRBF coll. / Holotypus / *Platypalpus subpectoralis* n. sp. det. Raffone G. 2001” (NRBF).

Notes on type material. Holotype is well preserved, originally stored in alcohol, but during this study was dried and mounted on a card. It is a specimen of *P. pectoralis* (Fallén).

Remarks. Characters of *P. pectoralis* not previously properly described and specified here include: postpedicel in some specimens narrow, so this segment may be up to three times longer than broad; clypeus narrow and lustrous, gena very narrow and lustrous; katepisternum lustrous up to extreme posterior margin but anterior margin with unusually long microtrichia especially in its dorsal part; postalar seta short but subapical scutellar seta may be subequally as long as apical seta; a row of 2–6 notopleural setae, usually 1–3 of them longer than remaining; midtibial spur clearly developed; vein R₁ forms with costa very dark swelling apically; basal part of anal vein well developed. Genitalia illustrated properly by Chvála (1975, figs 264–266): left cercus broadened apically, right surstylus short and broad, nearly semicircular.

Platypalpus subpectoralis is considered a new junior synonym of *P. pectoralis*.

***Platypalpus subwagneri* Raffone**

Platypalpus subwagneri Raffone, 2003b: 51.

Type material examined. HOLOTYPE ♂, labelled: “ITALY—Abetone (pt)—Ris. Nat. Pistoiesi—Camolino m 1 500, 17.VII—8.VIII.2001 legit Lab. Bosco Fontana, Malaise trap State Forestry Corps—NRBF coll. / *Platypalpus subwagneri* n. sp. det. Raffone G. 2002 / Holotypus ♂” [genitalia dissected] (NRBF). **PARATYPES:** same data as holotype (1 ♀) (NRBF), same data as holotype (1 ♀) (MSNV).

Notes on type material. Holotype was preserved in ethanol and during this study was dried and mounted on a card. It is well preserved (with left mid leg missing and some large setae broken). Paratype deposited in NRBF has postpedicels of both antennae missing as well as right mid and hind legs and broken large setae. Paratype deposited in MSNV is well preserved with only right foreleg missing. Both holotype and paratypes are specimens of *P. exilis*.

Remarks. Characters of *P. exilis* beside those mentioned in several descriptions and specified here include: laterad from vertical setae is usually another part of similar (convergent) setae (when broken and the inclination of setae is not obvious, such specimens may erroneously lead in keys to *P. aurantiacus* Collin); face very narrow, in middle 5X narrower than width of frons on the level of front ocellus; clypeus narrow, long and lustrous; proboscis usually yellow or yellowish brown, darkened apically; front femur with several preapical anterior and anteroventral bristly-like setae; midtibial spur as long as or slightly longer than width of apical part of tibia; last tarsomere of all legs yellow in basal third to fourth and black to almost black in apical part; katepisternum lustrous up to hind margin; spine-like ventral setae on mid femur on posterior side about 2X longer than those on anterior row; crossveins contiguous or nearly so, basal part of anal vein distinct, CuP only slightly recurrent. Female abdomen almost whitish yellow with last segments including cerci usually darker, also male abdomen paler than thorax, with darker genitalia. Male genitalia: left epandrial lamella elongate, homogeneously short setose along ventral and apical margin, with small projection dorsally in about middle (this projection and corresponding incision is rather less pronounced than illustrated by Chvála 1975); cerci simply digitiform and narrow, right one slightly narrower and longer than left one; right epandrial lamella with small hairy projection apically and with rounded nearly square shaped surstylus.

Platypalpus subwagneri is considered a new junior synonym of *P. exilis*.

Nomenclatural summary and discussion

Platypalpus maculimanus (Zetterstedt, 1842)

Platypalpus canzonerii Raffone, 2002, **syn. nov.**
Platypalpus flavicornis (Meigen, 1822)
Platypalpus litoreus Raffone, 2010, **syn. nov.**
Platypalpus boreoalpinus Frey, 1943
Platypalpus pseudoalter Raffone, 2003, **syn. nov.**
Platypalpus exilis (Meigen, 1822)
Platypalpus pseudostroblii Raffone, 2002, **syn. nov.**
Platypalpus subwagneri Raffone, 2003, **syn. nov.**
Platypalpus longiseta (Zetterstedt, 1842)
Platypalpus romaniolus Raffone, 2010, **syn. nov.**
Platypalpus articulatus Macquart, 1827
Platypalpus subarticulatus Raffone, 2002, **syn. nov.**
Platypalpus macula (Zetterstedt, 1842)
Platypalpus submaculus Raffone, 2002, **syn. nov.**
Platypalpus pectoralis (Fallén, 1815)
Platypalpus subpectoralis Raffone, 2002, **syn. nov.**

All species of the genus *Platypalpus* described as new species by Raffone (2002a, b, c, 2003a, b, 2010) proved to be junior synonyms of previously described species.

We must agree with the statement of Rognes (2015) that Raffone has been quite incompetent in identifications and his papers only plagued the scientific literature with useless data. On the other hand, Raffone's knowledge of Hybotidae is apparently better than that of Calliphoridae, because he correctly attributed all specimens to the genus *Platypalpus*.

The roots of Raffone's mistakes are unclear. For example, in his species *subwagneri* he stated posteroventral setae on mid femur as present ("middle femur with and a regular series of long posteroventral yellow bristles") but in fact they are absent. Another example: in his species *pseudoalter*, the very peculiar shape of the left cercus (Raffone 2003a, fig. 5) was caused by depicting the cercus together with parts of the subepandrial sclerite (compare with fig. 321 in Chvála 1975). This mistake was probably caused by incomplete clearing of the genitalia. In *submaculus*, Raffone (2002b) described the postpedicel as yellow but in fact it is brown, not much paler than both basal segments. Maybe, its somewhat paler appearance (but not at all yellow color) is caused by reflections of small setulae in some lights. Interestingly, the very common species, *P. exilis*, was described twice by Raffone, as *P. pseudostroblii* and *P. subwagneri*.

In this paper, we also supplemented the existing species descriptions (Collin 1961; Chvála 1975, 1989; Grootaert & Chvála 1992) with additional details and/or we expanded the range of variability of important diagnostic characters.

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