Platypalpus ochrocera (Collin) (Diptera, Hybotidae) from exposed riverine sediments with a description of the female

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Summary

The female of the hybotid Platypalpus ochrocera (Collin, 1961) is described and the relevant British and European keys are modified to take account of newly recognised characters. Distributional and ecological information on P. ochrocera is presented, and an apparent association with exposed riverine sediments discussed. Platypalpus velocipes Frey, 1943 is newly recorded for Slovakia.

Introduction

In 2015 I operated emergence traps set on exposed riverine sediments on the King Water (NY525635), a tributary of the River Irthing in north Cumbria. Four standard soil emergence traps with a footprint of 60cm by 60cm were each set on different substrate types. A valance around the base of each trap was buried in the substrate, ensuring that all insects emerging from the soil surface within the trap were retained. At the apex of each trap, a collecting bottle containing 50% antifreeze was used to kill and preserve emergent individuals. The traps were operated from 7 June to 19 July and serviced on a weekly basis, apart from the final sample which covered a two week period. One trap was installed on loose, vegetated sand deposited on the riverbank and in the sample from this trap for the period 3-19 July were 30 specimens of P. ochrocera (14 males and 16 females). There were also seven specimens of P. interstinctus (Collin), two of P. niger (Meigen) and a single female P. articulatoides (Frey). I also swept 10 specimens (5 males and 5 females) of P. ochrocera from vegetated sandy shingle on the Ettrick Water, Selkirkshire (NT275144) on 15.viii.2015.

Whilst the male specimens of P. ochrocera keyed out readily enough using Grootaert and Chvála (1992), the females were more problematic, running to P. articulatoides by dint of their darkened postpedicel, pale palpi and coxae, but lacking the distinctly annulated tarsi of that species. It is apparent that the key does not take account of the darkened postpedicel of female P. ochrocera and consequently female specimens of this species will not key out satisfactorily.

Collin (1961) described P. ochrocera new to science from just a single male and a later account of the species (Chvála 1989) also appears to be based on male specimens only. There are no female specimens of P. ochrocera in the Chvála Collection at the Oxford University Museum of Natural History, or in the collection of the Russian Academy of Sciences in Moscow (I. Shamshev pers. comm.). It seems worthwhile to provide here a description of the female of P. ochrocera and to adapt the relevant parts of the British and European keys to take account of this new information on the characters of female P. ochrocera.

Recognition

Characters which separate P. ochrocera from P. articulatoides are front tarsus without distinct dark annulations, at most tips of tarsomeres faintly dusky and apical tarsomere darkened above

in P. ochrocera. Postpedicel 1.5 times as long as deep (0.11 x 0.07 mm.) – twice as long as deep (0.12 x 0.06 mm.) in P. articulatoides (Fig. 1). Wing cross-veins more separated, distance between cross-veins almost as long as vein bm-cu closing second basal cell (less than half the length of bm-cu in P. articulatoides).

P. articulatoides was reported new to Britain by Allen (1986), where he compared the species with P. articulatus Macquart and P. maculimanus (Zetterstedt), the latter species having not yet been recorded in Britain although likely to occur here. Platypalpus articulatoides and P. ochrocera, with their yellow palpi and posterior four coxae, are readily distinguishable from P. articulatus and P. maculimanus in which these structures are black-brown.

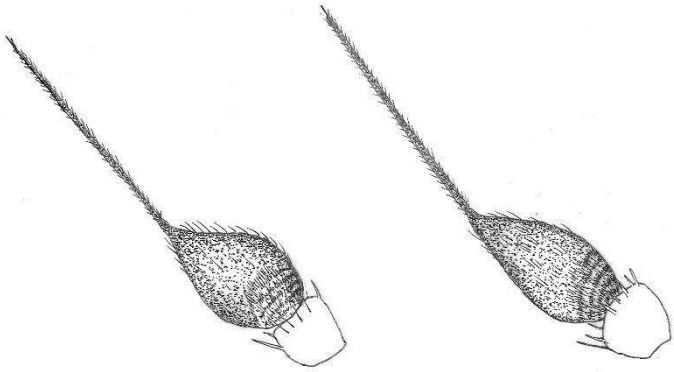

Fig. 1. Antennae of female Platypalpus ochrocera (left) and P. articulatoides (right).

Description of female Platypalpus ochrocera (Collin, 1961)

Material examined. ENGLAND: 16 females, King Water (NY525635), Cumbria, 3-19.vii.2015, vegetated, flood-deposited sand on riverbank, soil emergence trap, S.M. Hewitt. SCOTLAND: 5 females, Ettrick Water (NT275144), 15.viii.2015, vegetated exposed riverine sediment, sweep-netted, S.M. Hewitt. All material is deposited in the National Museums of Scotland.

Diagnosis. Small black species with one pair of vertical setae belonging in the P. pallidiventris-cursitans group, antennae yellow with black postpedicel; thorax microtrichose apart from polished area on katepisternum, setae pale; wing with cross-veins widely separated; legs entirely yellow apart from dusky apical tarsomeres and faint annulations on other tarsomeres, mid-femur little thicker than fore-femur and with long postero-ventral setae, mid-tibia with short, blunt, trowel-shaped apical spur; abdomen black, shining. Differs from the male in having black postpedicel (usually at most only tip darkened in male).

Head. Black, grey microtrichose. Face and clypeus white microtrichose. Antenna yellow with postpedicel black. Postpedicel about 1.5 times as long as broad, stylus ≥ twice as long as postpedicel. Proboscis about 1/4 as long as depth of head. Palpus yellow, small (about half length of proboscis), 1.5 times as long as broad, covered in fine decumbent pale yellow hairs with a few longer pale setae, the longest as long as palpus. Ocellar setae pale yellow, anterior pair twice as long as posterior pair. One pair of yellow vertical setae. Occiput grey microtrichose with scattered fine, yellow setae.

Thorax. Black, covered in yellowish-grey microtrichia apart from shining black area on katepisternum. All setae pale yellow. Chaetotaxy: postpronotal seta long and strong (with 2 or 3 additional small, fine setae present), posthumeral seta absent, acrostichals biserial (5-9 per row) with gap between setae within and between rows about as long as setae; 6 dorsocentrals, anterior setae slightly longer than acrostichals, posterior 2 pairs much longer and stronger; 2 more or less equally strong notopleural setae; 1 long postalar and 2 pairs of scutellar setae, the inner pair longer and stronger than the outer.

Wing. Clear with pale yellow veins. Veins R_{4+5} and M_1 nearly straight and almost parallel in apical half. Crossveins more widely separated, distance between crossveins more than half length of outer crossvein bm-cu, 1 strong yellow costal seta near base. Squama yellow with pale fringe. Halter yellow.

Legs yellow, including all coxae. Tarsi at most faintly annulated; apical tarsomere dusky yellow. Fore femur slightly thickened. Fore tibia slightly thickened, weakly spindle-shaped, with fine yellow hairs slightly shorter than tibia is deep. Mid femur slightly thicker than fore femur with double row of very short black setae ventrally, accompanied by a sparse postero-ventral row of about 8 fine yellow setae almost as long as femur is deep. Mid tibia with single ventral row of short black setae and a short, trowel-shaped apical spur that is not longer than depth of tibia. Hind femur and tibia slender, covered in fine yellow hairs.

Abdomen. Blackish brown, entirely shining apart from small microtrichose patch laterally at anterior margin of tergites 1 – 6 (indistinct or absent on tergites 3 and 4), all of tergites 7 and 8 microtrichose. Sternite 6 microtrichose at base. Abdomen sparsely covered with fine yellow hairs.

Modification of Grootaert and Chvála (1992) to accommodate female P. ochrocera

147 (140) Antenna entirely yellow, at most third segment slightly darkened at extreme tip 148
- Third antennal segment dark, at most narrowly yellowish at extreme base 157

148 (147) Vein M very conspicuously bowed. Mid femur very thickened, about twice as thick as fore femora; mid tibia with a large, sharply pointed apical spur. Large species, body usually over 3mm in length .....**major (Zetterstedt)**
- Veins R_{4+5} and M almost parallel. Mid femur slender, scarcely deeper than fore femur. Smaller species, body less than 3mm in length (P. flavicornis-complex) 149

149 (148) Palpi long and narrow, silvery-white. Wing distinctly yellowish, somewhat greyish clouded at tip. 3rd antennal segment completely pale in male, brownish in female, long, 2.5 times as long as deep; arista blackish, slightly longer. Tarsi yellow with last segment blackish, but fore tarsi with dark annulations beneath. Mid tibia with a sharp spur in male, blunt in female .....**divisus Walker**
- Palpi broadly ovate. Wings clear or uniformly faintly yellowish. 3rd antennal segment shorter, at most scarcely twice as long as deep 150

150 (149) Very small species, body 1.4-1.8mm in length. Mid tibia with a small blunt spur not longer than tibia is deep, or spur exceedingly short. Legs pale, including tarsi, only last tarsal segment darkened when viewed from above.....151
- Larger species, body about 2.5mm in length. Mid tibia with a strong, sharply pointed apical spur; if blunt then longer than tibia is deep, or (P. pallidicornis male) tarsi with dark annulations.....152

151 (150) Frons broader, as wide as second antennal segment. Mesonotum thinly dark grey dusted, rather subshining; dc distinct and less numerous, 6 to 7 in one row. Antenna deep yellow, palpus yellowish, rather smaller. Tibial spur yellow, trowel-like .... **ochrocera male (Collin)**

- Frons very narrow, as wide as front ocellus. Mesonotum densely whitish-grey dusted; dc biserial, numerous and rather inconspicuous. Antenna whitish-yellow; palpus whitish, large-ovate. Mid tibia with only a small black projection at tip ..... **vegetus Frey**

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157 (147) Mid tibia with a very small blunt spur which is much shorter than tibia is deep. Very small species, body about 1.5-2.0mm in length. Mid femur rather slender, scarcely stouter than fore femur 158

- Mid tibia with a large, sharply pointed apical spur, if blunt-tipped (P. annulipes, P. subtilis females), then long, at least as long as tibia is deep. Larger species (except for P. calceatus and P. subtilis) 162

158 (157) Third antennal segment small and short, 1.5 to 2 times as long as deep; arista much longer, more than twice as long 159

- Third antennal segment long, at least three times as long as deep; arista about as long 162

159 (158) Palpus and posterior four coxae yellow 160

- Palpus and posterior four coxae black 161

160 (159) All tarsal segments of front leg with distinct dark annulations, other tarsi also annulated but generally less obviously. 3rd antennal segment twice as long as deep. Wing crossveins closer together, distance between crossveins less than half length of outer crossvein bm-cu. Proboscis longer, one third as long as head is deep, palpus reaching to about a third the length of proboscis..... **articulatoides Frey**

- Front tarsus without sharp black annulations, at most tips of tarsomeres faintly dusky and apical tarsomere darkened above. 3rd antennal segment 1.5 times as long as deep. Wing crossveins more separated, distance between crossveins more than half as long as outer crossvein bm-cu. Proboscis shorter, one quarter as long as head is deep, palpus reaching to half the length of proboscis ..... **ochrocera** female **(Collin)**

161 (159) Male: tip of left periandrial lamella with about 4 long, black bristles; outer margin with short bristles ..... **articulatus Macquart**

- Male: tip of left periandrial lamella and outer margin with only short hairs .... **maculimanus (Zetterstedt)**

….. The key then continues with couplet numbering increased by 1.

Plant (2012) provides a key to British species of Platypalpus. Platypalpus ochrocera is found in Key G – species with black thorax, one pair of vertical setae, scutum distinctly dusted, basal antennal segments yellow (at least dark reddish yellow), katepisternum polished, posthumeral setae absent and with tibia 1 and 3 not usually bearing short dark setae dorsally.

Plant (2012) Key G should be modified as follows to accommodate female P. ochrocera:

1. Antenna yellow; at most with tip of postpedicel and stylus darkened.....**2**
- Antenna with postpedicel darkened, at most narrowly paler/yellowish basally **7**

2. Vein M very obviously bowed; F2 strongly inflated, 2X as thick as F1; usually large species but dwarf forms occur (2.8-5.5mm).....**major (Zetterstedt)**
- Vein M almost parallel with R_{4+5}; usually smaller (≤ 3mm).....**3**

3. Palpi long, narrow, silvery white; antenna with postpedicel pale (male) or brownish (female), long (2.5X as long as deep with stylus slightly longer; tarsi yellow with 5th segment blackish and basal three segments of front tarsus subannulate ventrally (i.e. with a small dark spot apicoventrally); wings distinctly yellowish.....**divisus Walker**
- Palpi broadly ovate; antenna with postpedicel ≤ 2X as long as deep; wings clear or faintly yellowish.....**4**

4. Very small species (1.4-1.8mm); antenna deep yellow; T_2 with apical spur short, trowel-like; tarsi yellow, only 5th segment darkened..... **ochrocera (Collin) male**
- Larger species (usually c2.5mm); antenna paler yellow; T_2 with strong sharply pointed apical spur (if blunt then spur is longer than T_2 is deep or [pallidicornis male] tarsi dark annulated **5**

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7 T_2 with apical spur blunt and shorter than limb is deep **8**
- T_2 with apical spur large and sharply pointed (if blunt tipped then at least as long as limb is deep).....**12**

8 Antenna with postpedicel ≥3X as long as deep, stylus shorter; stigma present at apex of R_1.....**stigma (Collin)**
- Antenna with postpedicel ≤2X as long as deep, stylus longer; stigma absent.....**9**

9 C2, C3 and palpi yellow.....**10**
- C2, C3 and palpi dark brown to black.....**11**

10 All tarsal segments of front leg with sharp black annulations, other tarsi also annulated but less strongly; postpedicel longer, 2X as long as deep; wing cross-veins closer together, distance between crossveins distinctly shorter than half outer crossvein bm-cu. Proboscis longer, one third as long as head is deep, palpus reaching to about a third the length of proboscis.....**articulatoides Frey**
- Front tarsus without sharp black annulations, at most tips of tarsomeres faintly dusky and distal tarsal segment darkened above; postpedicel shorter, ≤1.5 times as long as deep; wing crossveins more separated, distance between cross-veins more than half bm-cu. Proboscis shorter, one quarter as long as head is deep, palpus reaching to half the length of proboscis ..... **ochrocera (Collin) female**

11 Male: tip of left periandrial lamella with about 4 long black bristles; outer margin with short bristles..... **articulatus Macquart**
- Male: tip of left periandrial lamella and outer margin with only short hairs [not yet recorded in Britain but may occur]..... **maculimanus (Zetterstedt)**

….. The key then continues with couplet numbering increased by 1.

Distribution and status

The type of P. ochrocera was collected by Dr J.H. Wood in Mains Wood, Herefordshire [SO6438] on 13.vi.1911 (Collin 1961) and remained the only known British specimen until recent years. Falk and Crossley (2005) reclassified the species from RDB 1 to Data Deficient, remarking that it was possibly extinct in Britain. A specimen labelled P. ochrocera in the National Museum of Wales was collected by Andrew Godfrey on the Yorkshire Wildlife Trust reserve at Ripon Loop on the River Ure (SE317737) on 31.vii.2005. On 31.vii.2007, during a survey of ERS in Cheshire (Hewitt and Parker 2008), three male specimens of a Platypalpus from the River Bollin at Newton Hall (SJ877805) were tentatively identified as P. ochrocera and two females as P. articulatoides. These specimens are deposited at Tullie House Museum, Carlisle where I have recently re-examined them and confirmed the identity of the males and also re-determined the females as P. ochrocera. Interestingly, one of the three males has the apical half of the postpedicel darkened, whilst the other two had only the extreme tip of that segment darkened as with all other males of the species that I have examined.

The species is also rarely recorded in Europe; Merz and Chvála (1998) reported it only from Belgium, the former USSR, Germany and Switzerland. Platypalpus ochrocera is also known from Norway with six specimens flagged in the dataset of the "Diptera collection, Natural History Museum, University of Oslo" held by The Norwegian Biodiversity Information Centre (NBIC 2016). The Chvála collection in OUMNH has two males from the Czech Republic, Bilovice 'near river' (49°16'N 16°41'E), 13.vi.1981, leg. Barták. A further male in the Chvála collection labelled P. ochrocera is in fact P. velocipes Frey, 1943 from near the River Danube at Čenkov (47°47'N 18°33'E), 15.vii.1986, leg. Barták. This specimen has a brown postpedicel, which is not clearly darker than the rest of the antenna, leading to confusion with P. ochrocera. However the specimen differs from P. ochrocera in its much darker apical tarsomeres, wing crossveins closer together and has the distinctive genitalia of P. velocipes. This appears to be the first record of P. velocipes from Slovakia; it is otherwise reported only from Slovenia and Switzerland (Merz and Chvála 1998).

This new distributional and ecological information suggests that P. ochrocera has some affiliation with sandy exposed riverine sediments, although it is not necessarily restricted to this biotope.

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