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## Two new species of *Chalarus* Walker (Diptera: Pipunculidae) from Burma

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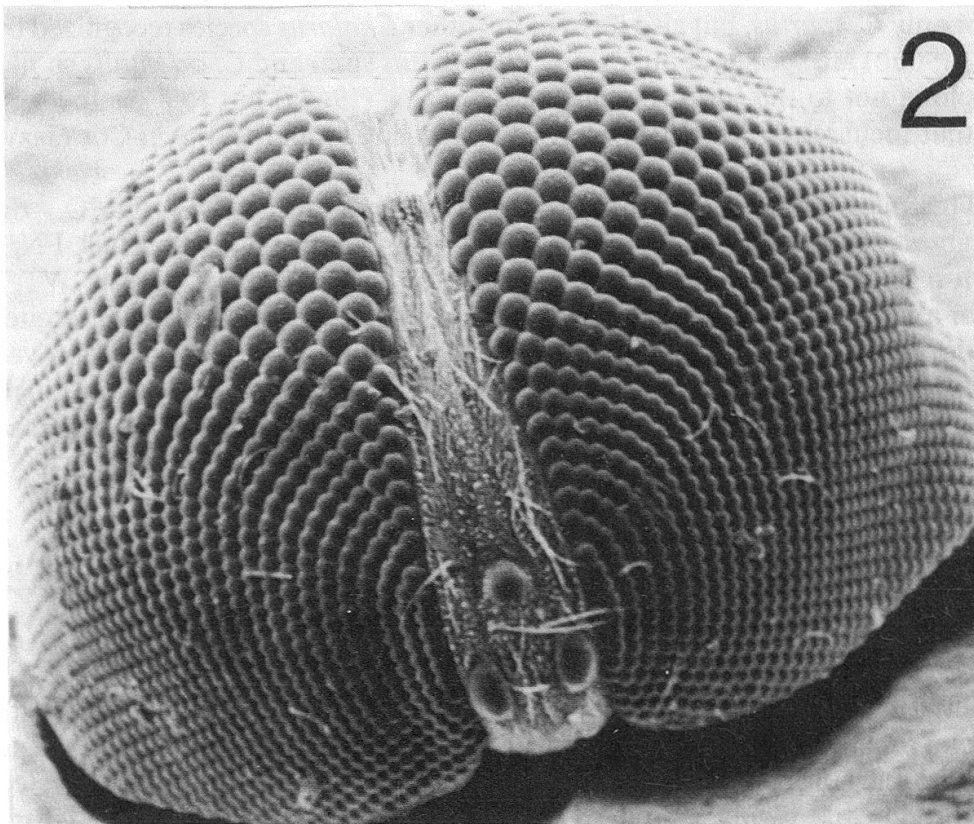
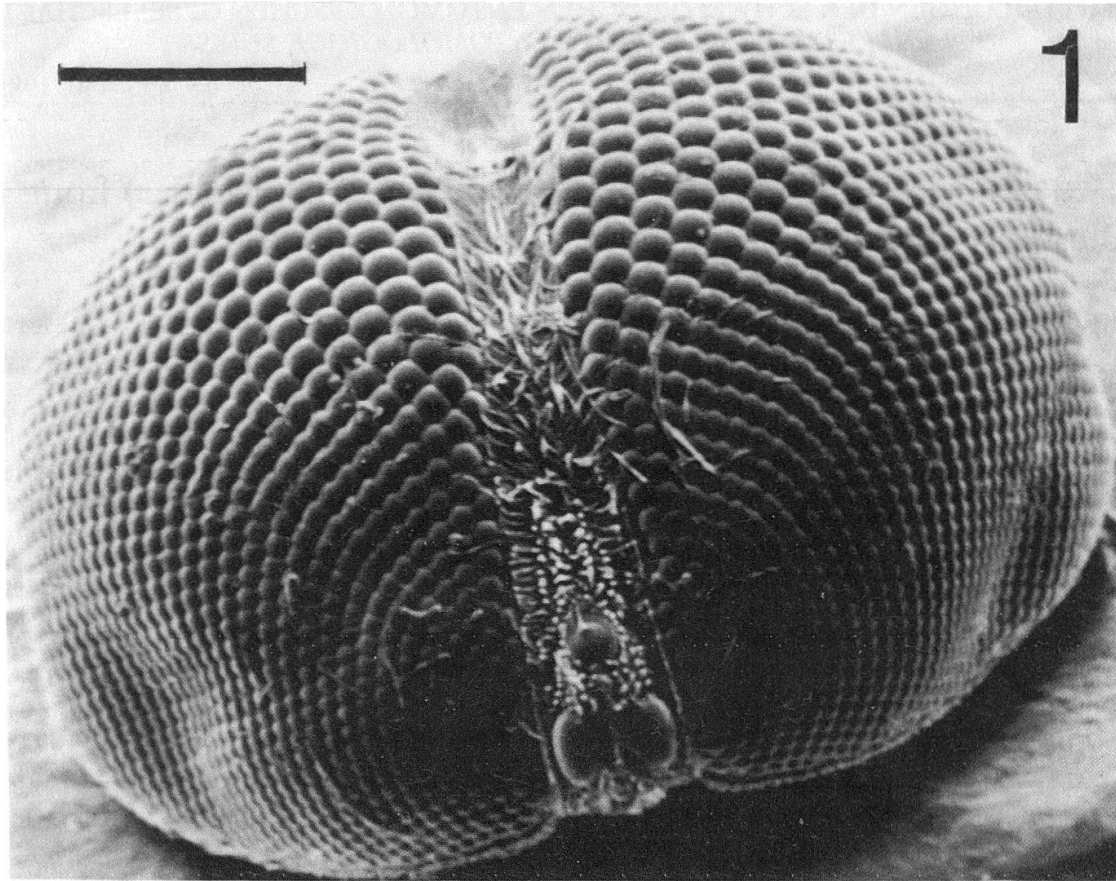
Two new Oriental species of *Chalarus*, *C. trilineatus* sp.n. and *C. orientalis* sp.n. are described from the female sex and compared with related species. The descriptions incorporate new characters of the thorax, hind legs and ovipositor.

During examination of the British Museum (Natural History) collection of Pipunculidae, I discovered two previously undescribed Oriental species of *Chalarus*, collected by Dr. RENÉ MALAISE in 1934. To date, only one species of *Chalarus*, *C. spurius* (FALLÉN), has been recorded from the Old World Tropics (HARDY, 1972, 1975; CROSSKEY *et al.*, 1980). The specimens used for the following descriptions were previously referred to, but not described by HARDY (1972). He treated them as part of the *C. spurius* complex. The idea, first put forward by COE (1966), that *C. spurius* is a species complex, has recently been looked into (JERVIS, in prep.). My studies have revealed that not only *C. spurius*, but also most of the other *Chalarus* species recognized by COE (1966a, 1966b) are species complexes. *C. trilineatus* sp.n. and *C. orientalis* sp.n. however, belong not to the *spurius* complex *sensu* COE (1966a) but to a distinct species-group that includes *C. basalis* LOEW, *C. fimbriatus* COE and *C. pughi* COE (JERVIS, in prep.).

The following abbreviations are used in the descriptions: DLO/DMO = diameter of largest ommatidial facet at front of eye; diameter of median ocellus; FN/FMO = width of frons at its narrowest point: width at level of medial ocellus; WT/LT = width of abdominal tergite 1 at its widest point: the combined lengths of tergites 1, 2 and 3 (dorsal aspect). LP/LB = length: width of ovipositor base, viewed posteroventrally *in situ*. Scanning electron micrographs of heads were taken using a Cambridge Stereoscan 600 (see JERVIS, 1981). All characters referred to can be clearly seen with a standard binocular light microscope.

### *Chalarus trilineatus* sp.n.

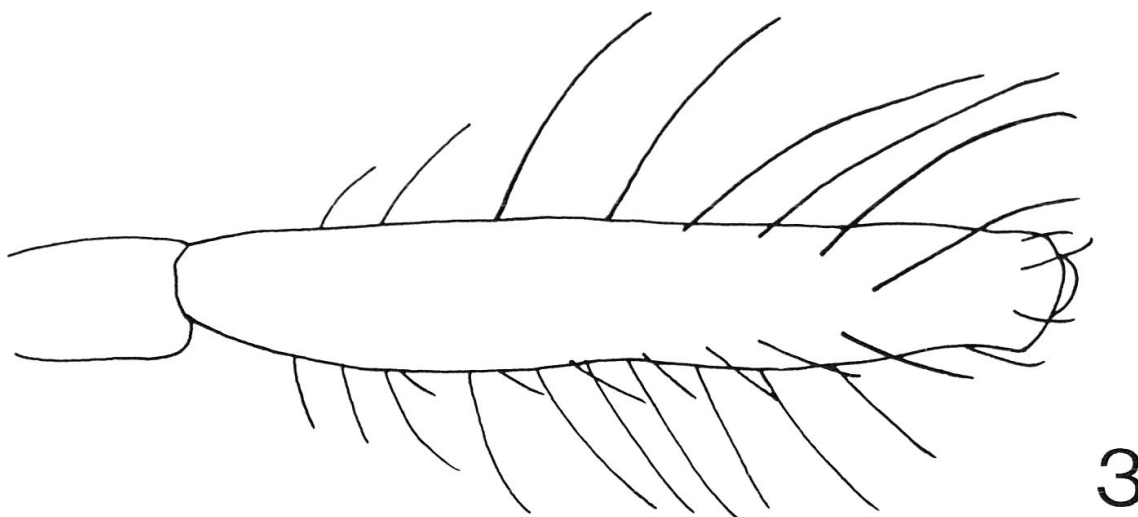
*Description:* Female. Total length excluding wings 2.8 mm. Wing length 3.5 mm. Total length including wings 3.9 mm. Colouration chocolate brown with orange-yellow markings on thorax, wings and legs. Frons (fig. 1). narrow, constricted just below middle; narrowing gradually for upper 0.5; almost parallel-sided for next 0.1–0.2 (FN/FMO = 0.65) then widening gradually for remainder; silver pubescence occupying 0.4–0.5 length from base of antennae, remainder greyish or brownish black.



Figures 1 & 2: Scanning electron micrographs of heads of *C. trilineatus* sp.n. (fig. 1) and *C. orientalis* sp.n. (fig. 2). Scale line = 100  $\mu$ .

2 rows of short proclinate straw-coloured setae extending from upper part of frons for 0.4 of its length. 2 long bronze-coloured ocellar setae. Eyes with moderately enlarged ommatidial facets at front, DLO/DMO = 1.1. Antennae with segments 1 and 2 viewed laterally orangish brown; broad kidney-shaped segment 3 slightly darker. Thorax chocolate brown except for postalar calli; dull; colouration obscured from most angles by dense long fawn-coloured pubescence both dorsally and dorsolaterally, this being much less dense along each row of dorsocentrals and along mid-dorsal line, the sparse pubescence forming 3 distinct broad chocolate-brown bands extending posteriorly to level of wing bases. Postalar calli orangish brown, contrasting with remainder of dorsal thorax. All setae straw-coloured. Interdorsocentrals and intraalars short. Dorsocentrals (except for last pair), humerals, supraalars and scutellars only slightly longer than other setae. Scutellum with 1 pair apical, 2 pairs subapical and 1 pair basal setae. Wings iridescent and orangish brown infusate, due to bronze-coloured microtrichia. Veins chocolate brown. Pterostigma dark brown, occupying 0.4 length subcostal cell from end of R<sub>1</sub> to end of Sc. Second section of M<sub>1+2</sub> 0.75–1.0× length R–M. Wing bases, especially basicosta and costa, orangish yellow. Thoracic squamae orangish yellow. Halteres orangish yellow with darker stems. Legs distinctly bicoloured chocolate brown/orangish yellow. Coxae, femora and tibiae almost entirely brown except for large areas of orangish yellow around joints (coxal-trochantal, trochantal-femoral, femoral-tibial (basal 0.3 of tibiae) tibial-tarsal; femora and tibiae appearing banded; trochanters orangish yellow or almost entirely brown; tarsi orangish yellow. «Mats» of short, closely grouped setae situated ventrally and anteroventrally on front and middle tibiae (apically) and tarsi gold-coloured and glistening; other setae straw-coloured. Front femora with posterior row of 11 short to elongate setae and posteroventral row of 9 short to elongate setae. Mid femora with posteroventral row of 13 widely spaced mostly elongate setae. Hind femora (fig. 3) with anterior/anterodorsal row of 2 short and 6 elongate setae; posterodorsal row of 7 reclinate setae gradually increasing in length from base to apex of femur, the last seta straight and not reaching femoral-tibial joint; posteroventral row of 2 short and 8 elongate setae. Pulvilli on front and middle legs 0.5 x length last tarsal segment; those on hind legs 0.5–0.7 x length last tarsal segment. Abdomen very slender, WT/LT = 0.5 all tergites dull chocolate brown, obscured from most angles by dense, long, fawn-coloured pubescence; all setae straw-coloured. Tergite 1 with lateral marginals forming 2 conspicuous «brushes» of 11–12 curved mostly elongate curved setae. Ovipositor (fig. 5) with piercer short, LP/LB = 1.3; ventrally facing edge more or less straight from anal opening until becoming slightly curved for apical 0.2. Base circular in outline, LB/WB = 1, with lateral sutures distinct and reaching piercer; tergite 7 evenly pubescent and with 8–9 elongate setae.

*Remarks:* This species closely resembles *C. basalis* LOEW, *C. fimbriatus* COE, *C. pughi* COE and *C. orientalis* sp.n. in having a slender abdomen, the abdomen being much broader in the other *Chalarus* species recognized by COE (1966a, 1966b). It differs from these however, in having the following: moderately enlarged ommatidial facets at the front of the eye (only slightly enlarged in *C. fimbriatus*, greatly enlarged in *C. pughi*); the dense, long pubescence of the thorax (equally dense but shorter in *C. basalis*, *C. fimbriatus* and *C. pughi*; sparser and much shorter in *C. orientalis*); the 3-banded pattern on the dorsal thorax (absent in all the other species); the very short thoracic setae; the short pulvilli on the front and middle pairs of legs (conspicuously long in *C. basalis* and *C. pughi*); the 8 elongate setae in the posteroventral row on the hind femora (mostly short or all short in all the other species); abdominal tergites 1–3, which are concolorous with the remaining tergites (not concolorous in *C. basalis*); the ovipositor piercer (slightly shorter than that of *C. orientalis*), the ventrally facing edge



Figures 3 & 4: Right hind femora (dorsal aspect) of holotype of *C. trilineatus* sp.n. (fig. 3) and paratype of *C. orientalis* sp.n. (fig. 4). Scale line = 0.12 mm.

of which is mainly straight (strongly curved in *C. basalis*, *C. fimbriatus* and *C. pughi*); the distinct lateral sutures of the ovipositor base (sutures indistinct and not reaching piercer in *C. orientalis*).

#### MATERIAL EXAMINED

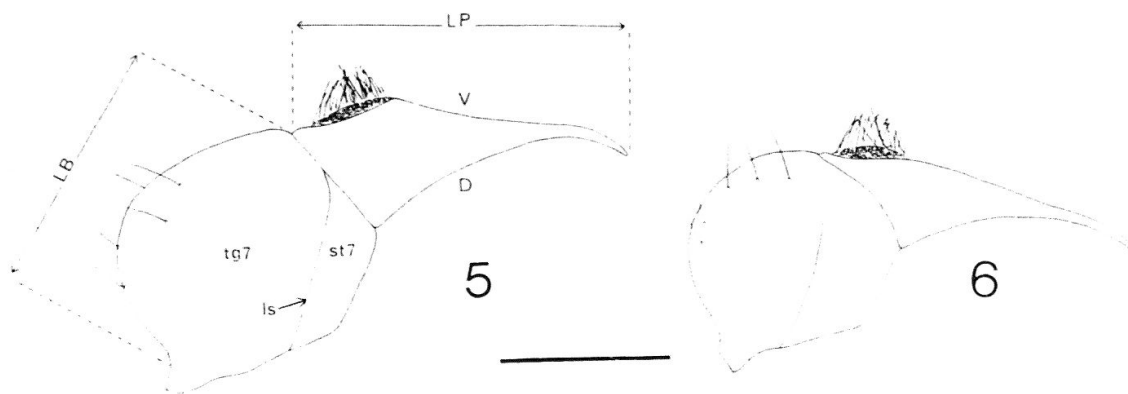
Holotype: female N.E. Burma: Kambaiti 7,000 ft, 30.iv.1934, R. MALAISE (BMNH).

Paratypes: 2 females same data as holotype. 1 female same data as holotype except 9.V.1934 (all in BMNH).

#### *Chalarus orientalis* sp.n.

*Description:* Female. Total length excluding wings 2.5mm. Wing length 3.0 mm. Total length including wings 3.8 mm. Colouration blackish brown. Frons (fig. 2) narrow, constricted just below middle; narrowing gradually for upper 0.6–0.7, almost





Figures 5 & 6: Ovipositors of paratypes of *C. trilineatus* sp.n. (fig. 5) and *C. orientalis* sp.n. (fig. 6). LB = Length of ovipositor base; LP = length of ovipositor piercer; V = ventrally facing edge of piercer; D = dorsally facing edge; tg 7 = 7th abdominal tergite; st 7 = 7th abdominal sternite; ls = lateral suture of ovipositor base. Scale line = 0.18 mm.

parallel-sided for next 0.1–0.2 ( $FN/FMO = 0.4–0.5$ ), then widening gradually for remainder; silver pubescence occupying 0.3 length from base of antennae, remainder brownish black. 2 rows of short proclinate bronze-coloured or dark brown setae extending from upper part of frons for 0.4–0.6 its length. 2 long dark brown ocellar setae. Eyes with moderately enlarged ommatidial facets at front,  $DLO/DMO = 1.1$ . Antennae with segments 1 and 2 dark brown; broad kidney-shaped segment 3 same or darker. Thorax blackish brown; shiny; colouration very slightly obscured from some angles by evenly sparse short fawn-coloured pubescence both dorsally and dorsolaterally; no pattering evident. Postalar calli concolorous with remainder of thorax. All setae bronze-coloured except for notopleurals, lower humerals and apical scutellars, which are dark brown. Interdorsocentrals and intraalars long. Dorsocentrals humerals, supraalars and scutellars much longer than other setae. Scutellum with 1 pair apical, 1 pair subapical. 1 pair basal and 4 pairs discal setae. Wings iridescent and orangish brown infusate due to bronze-coloured microtrichia: Pterostigma dark brown, occupying 0.7 length subcostal cell from end of R1 to end of Sc. Second section of  $M_{1+2}$  absent. Wing bases orangish brown. Thoracic squamae orangish brown. Halteres with orangish brown knob and darker stem. Legs uniformly chocolate brown except for small yellowish brown areas around joints (femoral-tibial, tibial-tarsal, tarsal-tarsal). «Mats» of short, closely grouped setae situated ventrally and anteroventrally on front and middle tibiae (apically) and tarsi gold-coloured and glistening; other setae and posteroventral row of 6 short to elongate setae. Mid femora with posteroventral row of 11 widely spaced elongate setae. Hind femora (fig. 4) with anterior / anterodorsal row of 4 short and 4 elongate setae; posterodorsal row of 9 reclinate setae, increasing in length from basal to apical end of femur, the last seta straight and reaching femoral-tibial joint; posteroventral row of 3 short setae. Pulvilli on all legs 0.6–0.7 length tarsal segment. Abdomen slender,  $WT/LT = 0.6$ , all tergites shiny and concolorous with thorax, sparsely pubescent. All setae bronze-coloured. Tergite 1 with lateral marginals forming 2 conspicuous «brushes» of 8–12 curved mostly elongate setae. Ovipositor (fig. 6) with piercer moderately long.  $LP/LB = 1.6$ ; ventrally facing edge more or less straight from anal opening then slightly curved for apical 0.15. Base broader than long.  $LB/WB = 0.7$ , lateral sutures indistinct and not reaching piercer (sutures seen only upon dissection). Tergite 7 evenly pubescent and with 9–12 elongate setae.

Remarks: The female holotype bears a label with the following data: «*Chalarus spurius* ? species complex, det. D.E. HARDY 1960». This species closely resembles *C. basalis* LOEW, *C. fimbriatus* COE, *C. pughi* COE and *C. trilineatus* sp.n., but differs in having the following: moderately enlarged front ommatidia (slightly enlarged in *C. fimbriatus*, greatly enlarged in *C. pughi*); the thorax and abdominal tergites, which are shiny (dull in all the other species); the sparse short pubescence of the thorax (denser and longer in all the other species); the absence of a 3-banded pattern on the dorsal thorax (unlike *C. trilineatus*); the long thoracic setae (unlike *C. trilineatus*); the short pulvilli on the front and middle pairs of legs (conspicuously long in *C. basalis* (and *C. pughi*); the short setae in the posteroventral setal row on the hind femora (setae mostly longer and also more numerous in *C. trilineatus*); abdominal tergites 1–3, which are concolorous with the remaining tergites (unlike *C. basalis*); the ovipositor piercer (longer than that of *C. trilineatus*), the ventrally facing edge of which is mainly straight (strongly curved in *C. basalis*, *C. fimbriatus* and *C. pughi*); the short lateral sutures of the ovipositor base (sutures distinct and reaching piercer in *C. basalis*, *C. fimbriatus*, *C. pughi* and *C. trilineatus*).

The shape of the frons is slightly different in *C. trilineatus* sp.n. and *C. orientalis* sp.n. It is not, however, thought to be a particularly useful diagnostic character, as it is known to be quite variable in other related species, especially *C. fimbriatus*. The same is true of the colour of the postalar calli.

*Material examined*: HOLOTYPE female, N.E. Burma: Kambaiti, 7,000 ft, 5.V.1934. R. MALAISE (BMNH).

PARATYPES: 1 female same data as holotype. 1 female same data as holotype except 30.IV.1934 (both BMNH).

#### ACKNOWLEDGEMENTS

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