

Description of a typical pupa of the tribe *Paederini*\*  
(*Coleoptera: Staphylinidae: Paederinae*)

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ABSTRACT. A typical pupa of the tribe *Paederini* is described and figured. Diagnostic characters of pupae of the genera: *Rugilus* SAMOUELLE, *Lathrobium* GRAVENHORST, *Paederus* FABRICIUS and *Ochthephilum* STEPHENS include: chaetotaxy of pronotum, abdomen, head and urogomphi; length of the first antennomere; wing length; length of hind legs and arrangement of pleural abdominal tubercles and isolated setae.

Key words: entomology, morphology, pupa, *Coleoptera*, *Staphylinidae*, *Paederini*.

INTRODUCTION

An analysis of laboratory-reared pupae of seven species representing four genera: *Rugilus* SAMOUELLE, *Lathrobium* GRAVENHORST, *Paederus* FABRICIUS and *Ochthephilum* STEPHENS, combined with literature data, makes it possible to propose a general description of pupa of the tribe *Paederini*.

The pupa was first described by VERHOEFF (1918), based on *Rugilus rufipes* GERM. Outlines of the pupa of *Paederini*-type presented in this paper were prepared based on the same species (Figs 1, 29-31).

Literature data (VERHOEFF 1918, ISAAC 1934, AHMED 1957, KUROSA 1958, RAMIREZ 1966, VERMA 1969, WATROUS 1981, FRANK 1987) suggest the existence of a particular type of pupa of the tribe *Paederini*, the pupa varying morphologically comparatively little.

An exact description of this type of pupa, adequately illustrated, should contribute to the systematics of immature stages of the *Staphylinidae*.

\*Papers Celebrating the 90th Birthday of Dr. Bolesław Burakowski

## DESCRIPTION OF THE PUPA

*Pupa exarata (libera).*

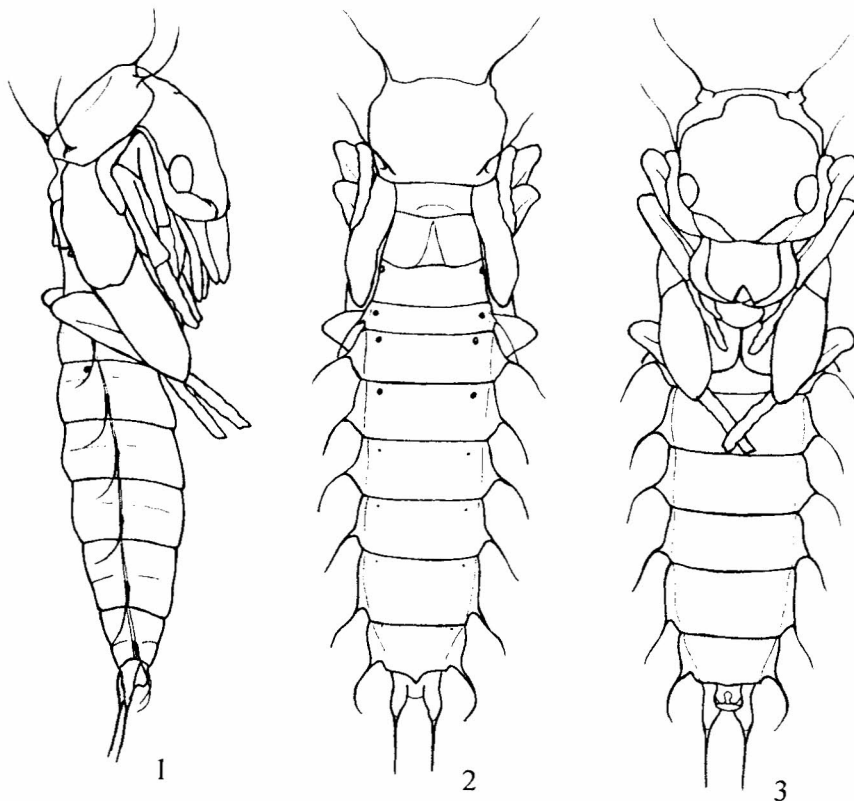
Body moderately convex, elongate. Abdomen slightly flattened dorso-ventrally, more or less narrowed posterad.

Colour from white to straw-yellowish. Cuticle densely, microscopically punctate.

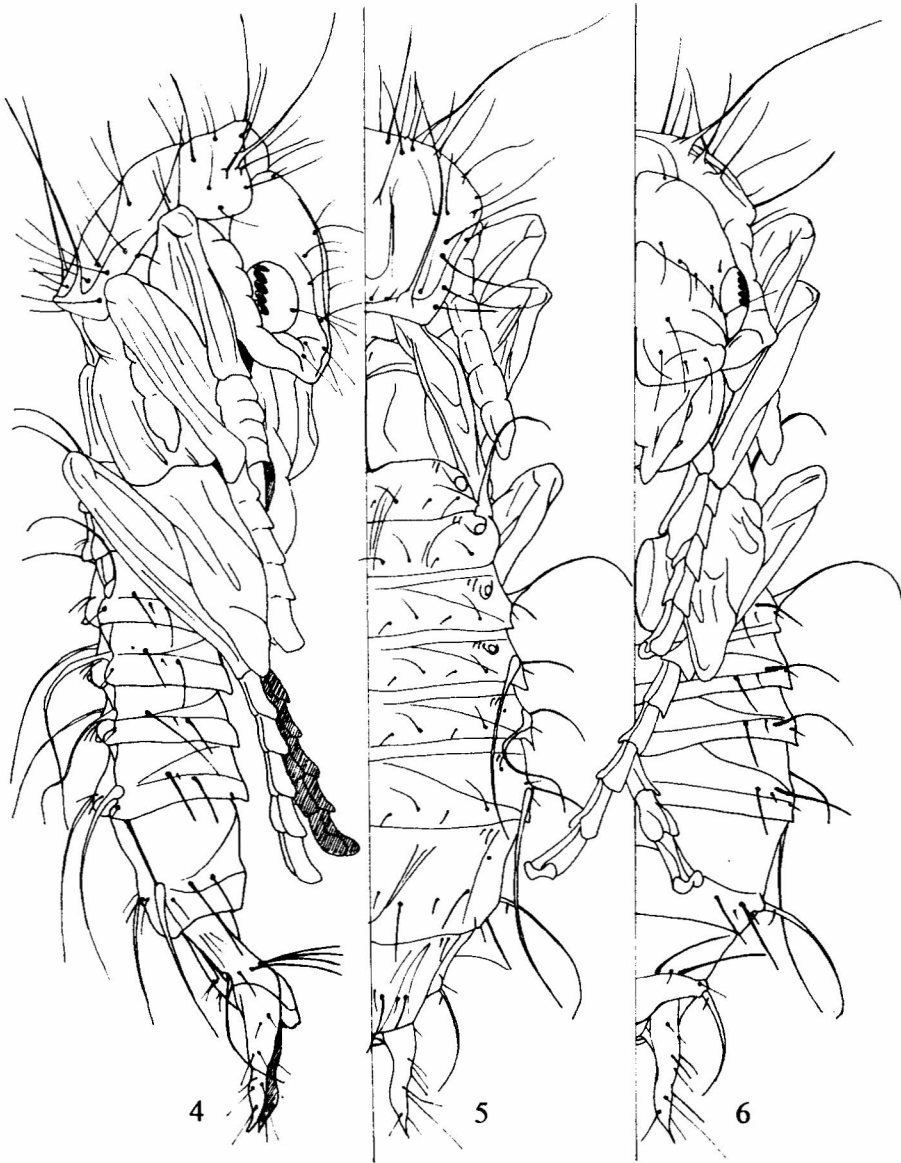
Head curved ventrad, but in top view not concealed by pronotum, roughly as long as wide. Neck clearly visible. Eyes partly concealed by antennae but also distinctly visible. Face sections, mandibles, antennae and tarsi elongate, with separate segmentation.

Labrum with a deep, triangular incision on its anterior margin; it partly covers mandibles and maxillary palps, so that mostly the last two segments of the latter protrude outside the labrum.

Antennae first adhering to head and winding around the fore femora, then run dorsally posterad reaching the base of mid tibiae.



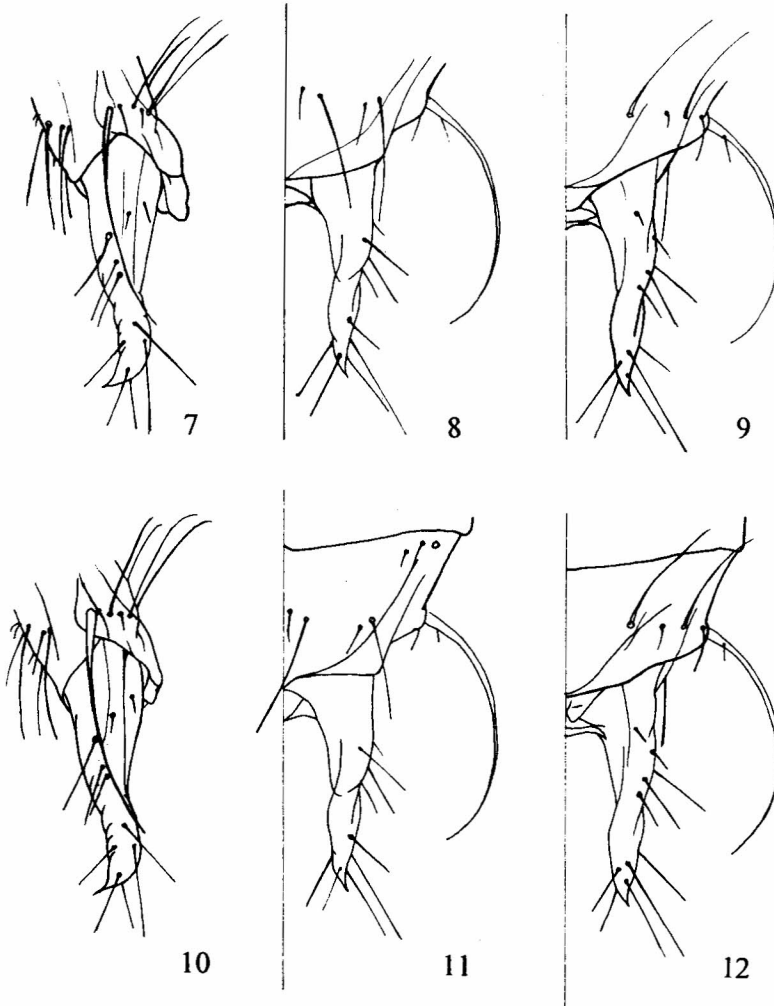
1-3. Pupa od *Paederini*-type (outline based on *Rugilus rufipes* GERM.): 1 - lateral view, 2 - dorsal view, 3 - ventral view



4-6. Pupa of *Paederus riparius* (L.): 4 - lateral view, 5 - dorsal view, 6 - ventral view

Pronotum from slightly transverse to somewhat longitudinal, slightly concave along the midline; on each clearly rounded corner a stronger seta placed on a distinct tubercle.

Both mesonotum and metanotum transverse. Anterior margin of mesonotum covered by pronotum, posterior margin convex. Metanotum longer than mesonotum, on its posterior margin a more or less distinct median triangular incision along its whole length.



7-12. Gonotheca of *Paederus riparius* (L.): 7-9 - male, 10-12 - female; 7, 10 - lateral view, 8, 11 - dorsal view, 9, 12 - ventral view

Both elytra and wings clearly separate. Elytra reaching at least the first abdominal tergite, wings reaching at least the hind femora.

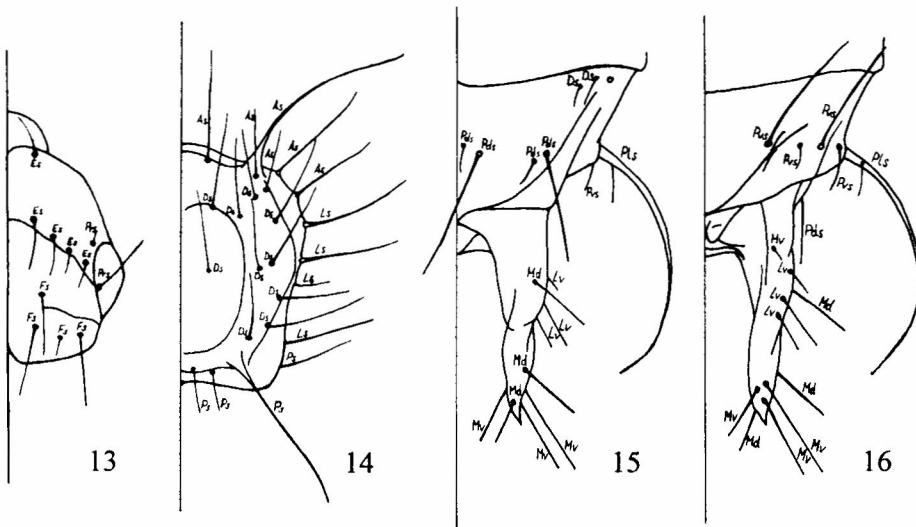
Fore tarsi usually hidden under labrum and mandibles. Mid and hind tarsi free. Mid tarsi extending at least to the hind coxae, hind tarsi reaching at least the base of the second visible (actually 5th) abdominal sternite.

Each of abdominal segments II-VIII has a single, long, pleural seta, set on a pleural tubercle. Abdominal tergites I-VIII have each one spiracle on each side. On tergites I-IV spiracles tuberculate, with well developed tracheae; on tergites V-VIII spiracles hardly visible, tracheae atrophied. On tergite IX well developed urogomphi. Sternite IX with well developed gonotheca, double in female and single in male.

All the setae situated on tubercles on the pronotum and abdomen long, strong, brownish and finely spinulose.

#### Diagnostic characters of the studied genera

1. Chaetotaxy of pronotum, abdomen, head and urogomphi
2. Length of the first antennomere
3. Wing length
4. Length of hind legs
5. Arrangement of pleural abdominal tubercles and isolated setae



13-16. Chaetotaxy of *Paederus riparius* (L.): 13 - head, 14 - pronotum: Es - epicranial seta, Prs - preocular seta, Fs - frontal seta, As - anterior seta, Ds - discal seta, Ls - lateral seta, Ps - posterior seta; 15 - abdomen dorsal (VIII+IX segments of abdomen and urogomphi), 16 - abdomen, ventral: Ds - dorsal seta, Pds - pleural seta, Pds - posterolateral seta, Pvs - posteroventral seta, Md - mediodorsal seta, Mv - medioventral seta, Lv - lateroventral seta

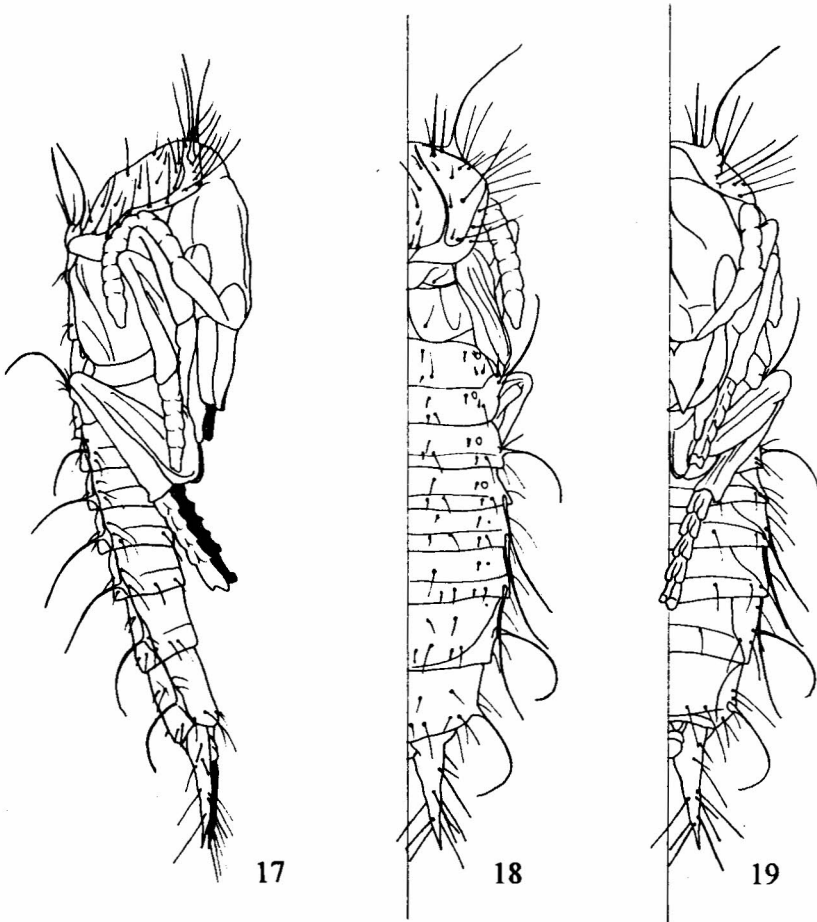
## PUPAE OF THE EXAMINED SPECIES

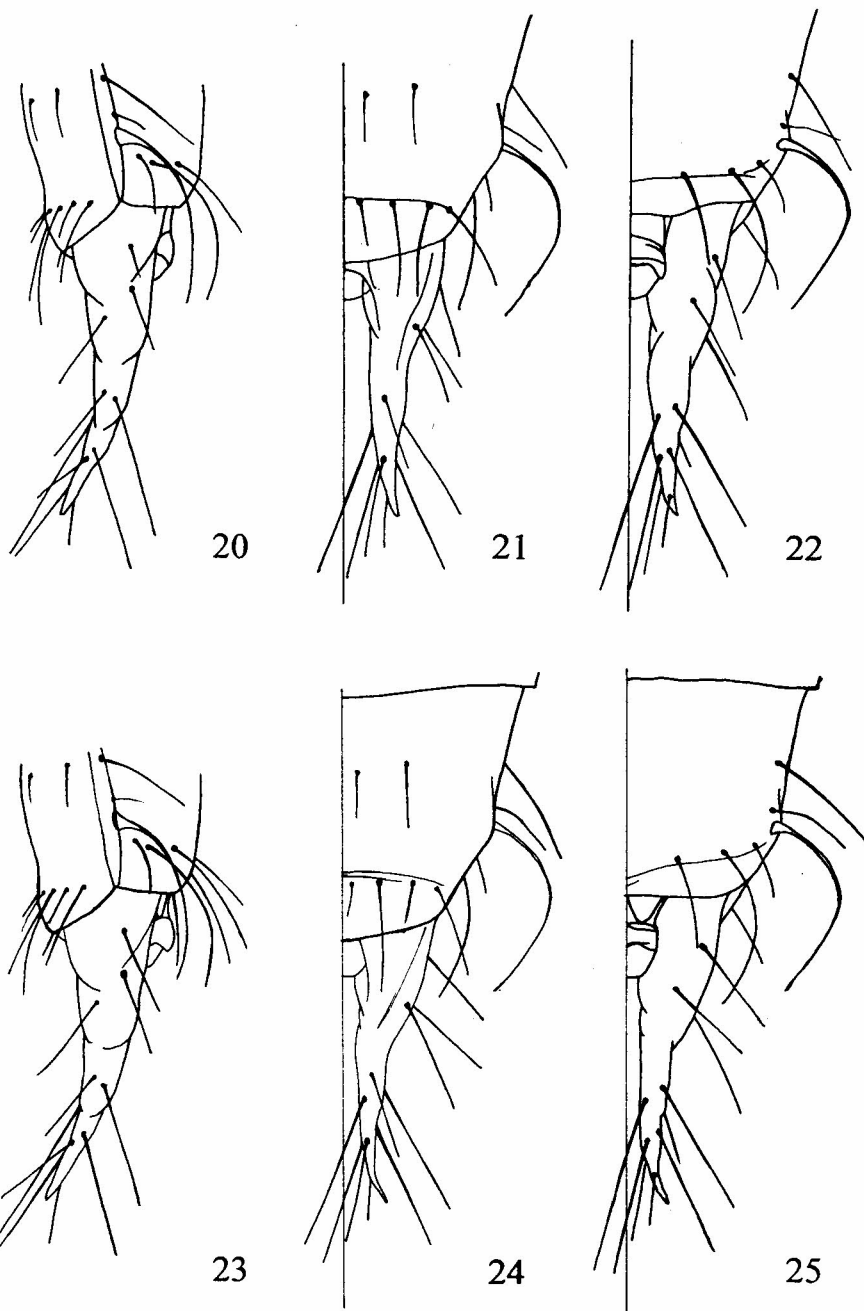
1. *Rugilus rufipes* GERMAR, 1835

(Figs 29-31)

Material: 3 pupae (2 female, 1 male).

Length without setae 4.5-5.0 mm. Colour white. Chaetotaxy of pronotum: only 4 stout setae set on tubercles in each corner of pronotum. Chaetotaxy of abdomen -

17-19. Pupa of *Ochtheophilum fracticorne* (ПАУК.): 17 - lateral view, 18 - dorsal view, 19 - ventral view

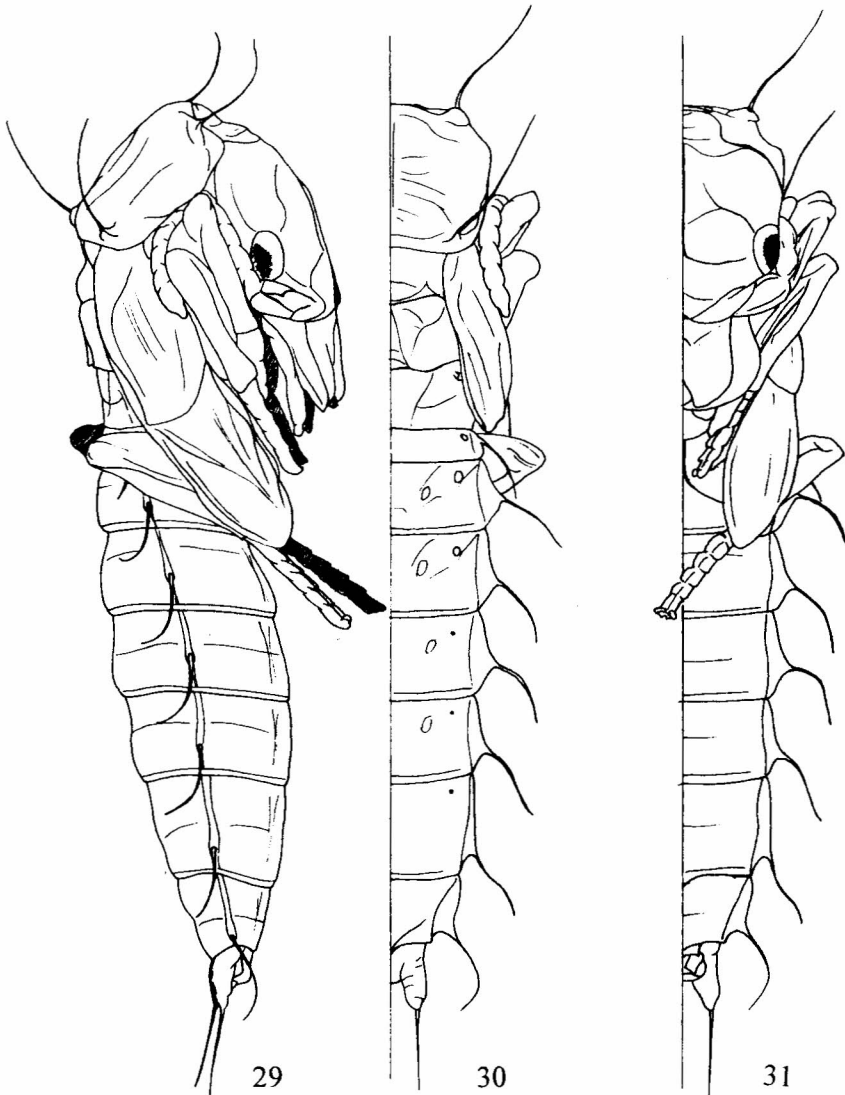


20-25. Gonotheca of *Ochtheophilum fracticorne* (ПЛУК.): 20-22 - male, 23-25 - female; 20, 23 - lateral view, 21, 24 - dorsal view, 22, 25 - ventral view

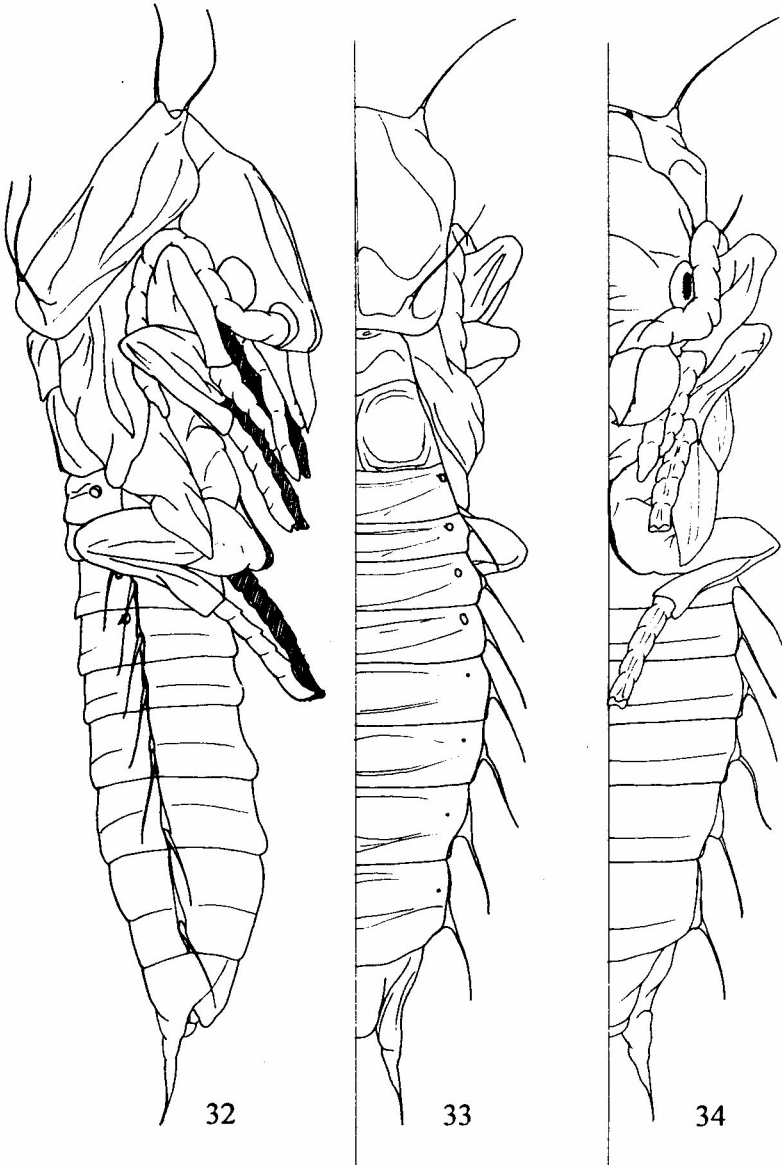




further numerous setae present. Chaetotaxy of abdomen - besides stout single setae placed on pleural tubercles, further numerous setae present (Figs 4-6, 15, 16). Head chaetotaxy as in figs 4-6, 13, 14. Chaetotaxy of urogomphi - numerous setae instead

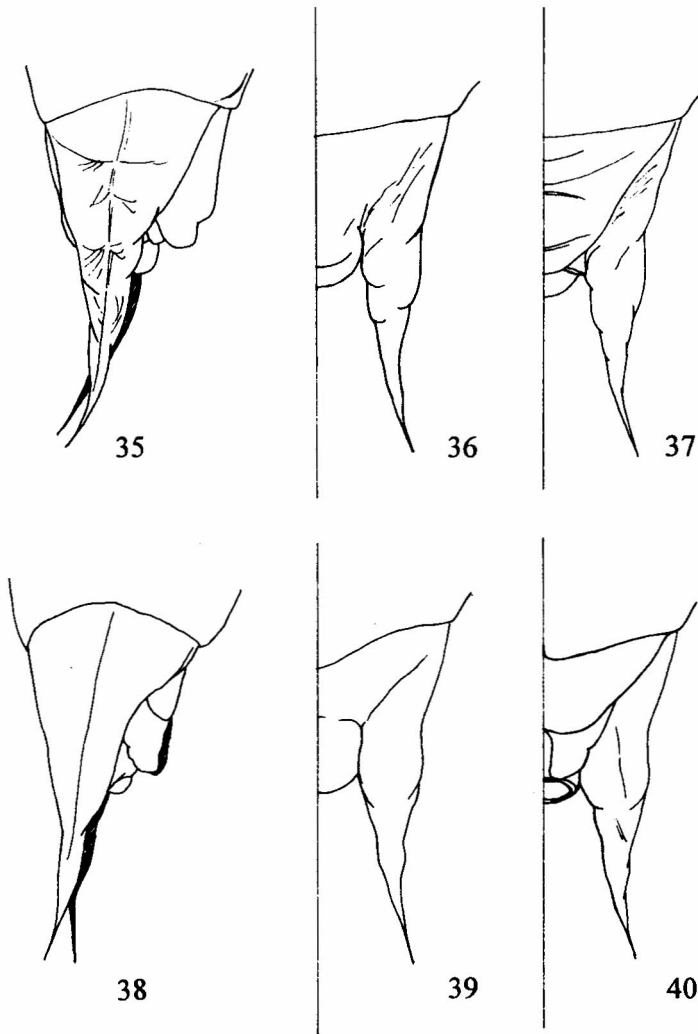


29-31. Pupa of *Rugilus rufipes* GERMAR: 29 - lateral view, 30 - dorsal view, 31 - ventral view

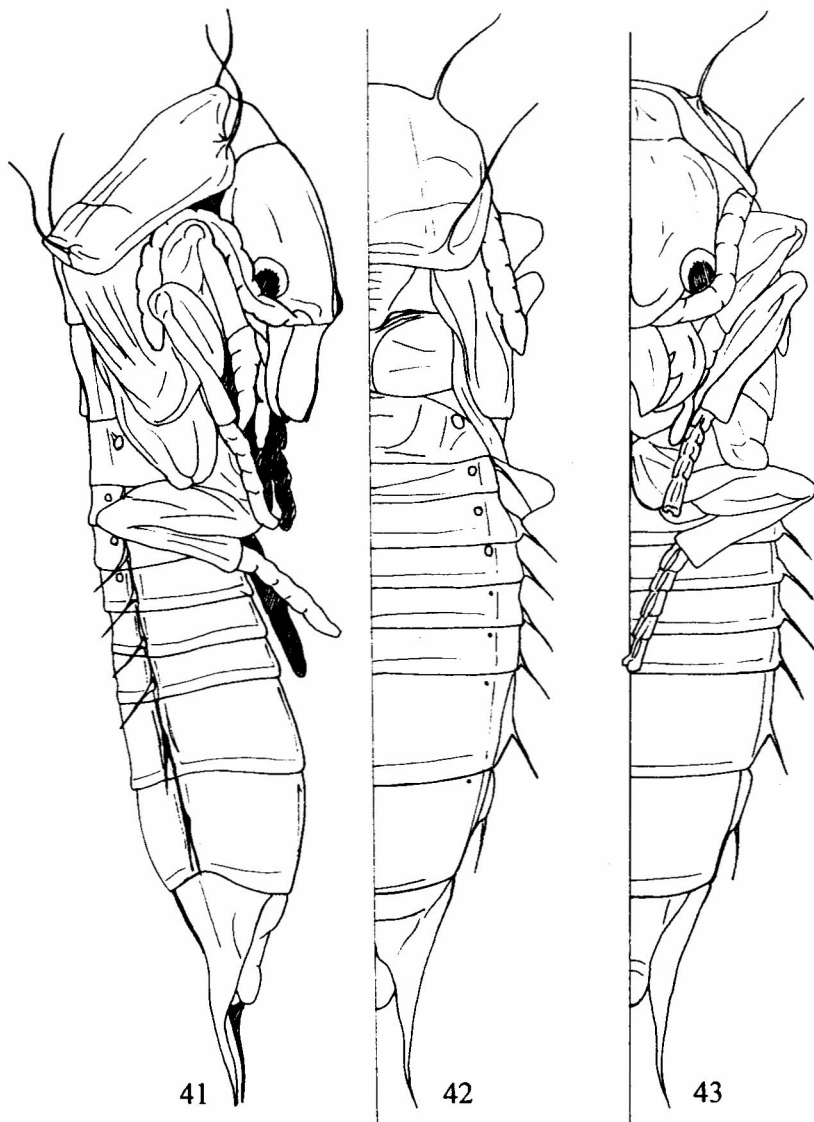


32-34. Pupa of *Lathrobium (Lathrobium) brunnipes* (F.): 32 - lateral view, 33 - dorsal view, 34 - ventral view

of a pair of stout apical setae (Figs 4-9). Below upper margin of eye three basal antennomeres. Wings extend beyond apices of hind tibiae. Hind tarsi exceed the middle of 7th sternite. Pleural abdominal tubercles situated dorsally.



35-40. Gonotheca of *Lathrobium (L.) brunripes* (F.): 35-37 - male, 38-40 - female; 35, 38 - lateral view, 36, 39 - dorsal view, 37, 40 - ventral view



41-43. Pupa of *Lathrobium (Lathrobium) volgense* Hochh.: 41 - lateral view, 42 - dorsal view, 43 - ventral view

**3. *Ochthephilum fracticorne* (PAYKULL, 1800)**

(Figs 17-28)

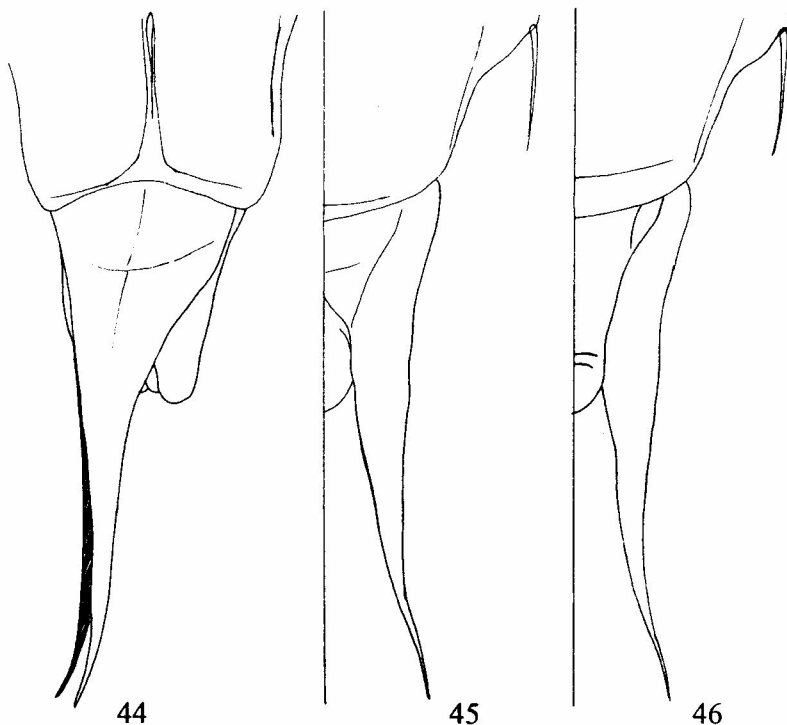
Material: 3 pupae (2 female, 1 male).

Length without setae 4.0-4.1 mm. Colour white. Chaetotaxy of pronotum - besides 4 stout setae set on tubercles in each corner of pronotum, further numerous setae present (Figs 17-19, 26). Chaetotaxy of abdomen - besides stout single setae placed on pleural tubercles, further numerous setae present (Figs 17-19, 27, 28). Head chaetotaxy absent. Chaetotaxy of urogomphi - numerous setae instead of a pair of stout apical setae (Figs 17-22). The first section of antenna reaches the upper margin of eye. Wings reach hind femora. Hind tarsi reach 7th sternite. Pleural abdominal tubercles situated dorsally.

**4. *Lahtrobium (Lathrobium) brunnipes* (FABRICIUS, 1792)**

(Figs 32-40)

Material: 5 pupae (3 female, 2 male).



44-46. Gonotheca of *Lathrobium (Lathrobium) volgensis* HOCHH., male: 44 - lateral view, 45 - dorsal view, 46 - ventral view

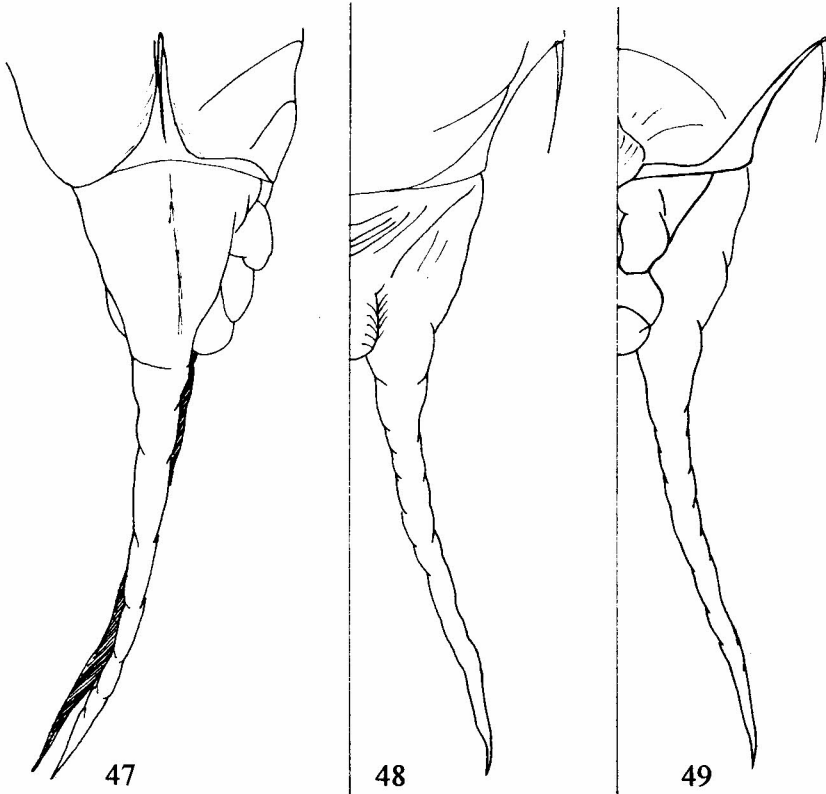
Length without setae 5.8-6.2 mm. Colour white. Chaetotaxy of pronotum and abdomen of stout single setae placed on distinct tubercles. Head chaetotaxy absent. Chaetotaxy of urogomphi absent. Below upper margin of eye three basal antennomeres. Wings extend beyond hind femora but do not reach apices of hind tibiae. Hind tarsi do not reach 6th sternite. Pleural abdominal tubercles situated laterally.

**5. *Lathrobium (Lathrobium) volgense* HOCHHUTH, 1851**

(Figs 41-49)

Material: 5 pupae (2 female, 3 male).

Length without setae 5.8-6.0 mm. Colour white. Chaetotaxy, length of the first antennomere, wing length, length of hind legs, arrangement of abdominal tubercles as in *L. brunnipes* (FABR.).



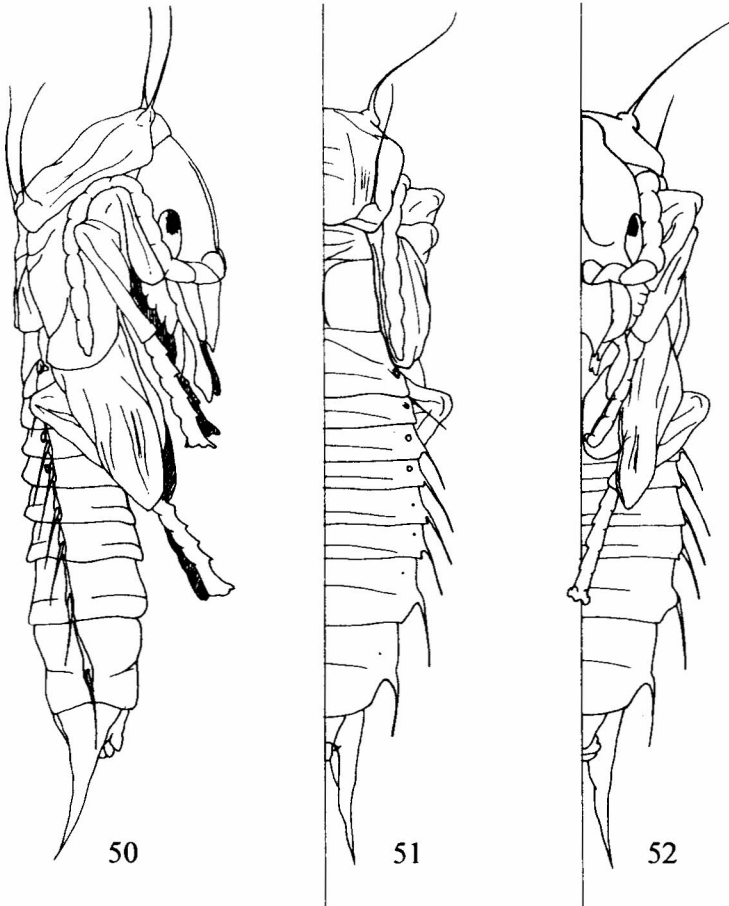
47-49. Gonotheca of *Lathrobium (Lathrobium) volgense* HOCHH., female: 47 - lateral view, 48 - dorsal view, 49 - ventral view

**6. *Lathrobium (Lathrobium) fovulum* STEPHENS, 1833**

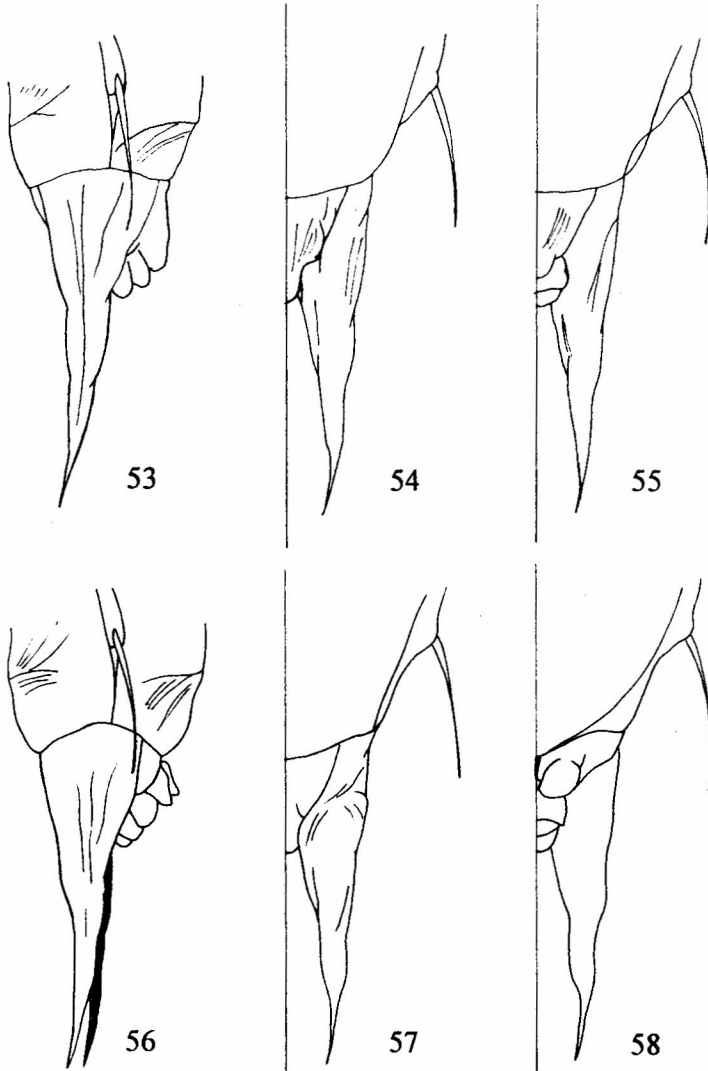
(Fig 59-61)

Material: 1 pupa (male).

Length without setae 4.3 mm. Colour white. Chaetotaxy, length of the first antennomere, wing length, length of hind legs, arrangement of abdominal tubercles as in *L. brunnipes* (FABR.).



50-52. Pupa of *Lathrobium (Tetartopeus) terminatum* GRAY.: 50 - lateral view, 51 - dorsal view, 52 - ventral view



53-58. Gonotheca of *Lathrobium (Tetartopeus) terminatum* GRAY.: 53-55 - male, 56-58 - female; 53, 56 - lateral view, 54, 57 - dorsal view, 55, 58 - ventral view

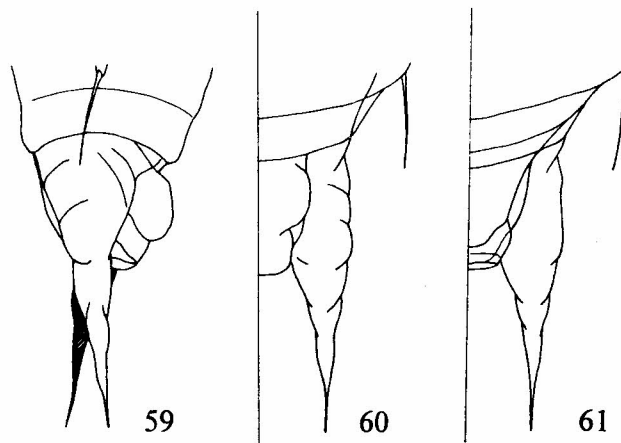


**7. *Lathrobium (Tetartopeus) terminatum* GRAVENHORST, 1802**

(Figs 50-58)

Material: 2 pupae (1 female, 1 male).

Length without setae 4.2-4.3 mm. Colour white. Chaetotaxy, length of the first antennomere, arrangement of abdominal tubercles as in *L. brunnipes* (FABR.). Wings extend beyond apices of hind tibiae. Hind tarsi exceed middle of the 7th sternite.



59-61. Gonotheca of *Lathrobium (Lathrobium) fovulum* STEPH., male; 59 - lateral view, 60 - dorsal view, 61 - ventral view

**8. *Lobrathium emarginatum* WATROUS, 1981**

(data from WATROUS 1981).

## KEY TO THE PUPAE OF THE EXAMINED GENERA

1. On pronotum, abdomen and urogomphi numerous setae. Pleural abdominal tubercles situated dorsally (Figs 2, 5, 6, 7, 10, 11) ..... 2 (*Ochtheophilum*, *Paederus*)
- On pronotum 4 setae placed in corners, on abdomen single pleural setae only (Figs 12, 13, 16, 19) ..... 3 (*Rugilus*, *Lathrobium*, *Lobrathium*)
2. Head chaetotaxy present. Below upper margin of eye three basal antennomeres. Wings extend beyond apices of hind tibiae (Figs 2-6) ..... *Paederus*

- Head chaetotaxy absent. Below upper margin of eye the first antennomere. Wings not reaching hind tibiae (Figs 7-11) ..... *Ochtheophilum*
- 3. Urogomphi terminated with stout apical setae. Hind tarsi do not reach 7th (4th visible) abdominal sternite. Wings extend beyond apices of hind tibiae (Fig. 12) ..... *Rugilus*
- No setae on urogomphi (Figs 13-22) ..... 4 (*Lathrobium*, *Lobrathium*)
- 4. Hind tarsi do not reach 7th (4th visible) abdominal sternite. Wings do not reach apices of hind tibiae (Figs 13-18, 22) ..... *Lathrobium* (*Lathrobium*)
- Hind tarsi reach at least 7th (4th visible) abdominal sternite. Wings extend beyond apices of hind tibiae (Figs 19-21) ..... *Lathrobium* (*Tetartopeus*), *Lobrathium*

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