

## Genitalia terminology in Coleophoridae

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The terminology used to describe the genitalia of the Coleophoridae has been inconsistent and partially incorrect, even in recent papers. Despite the recent revision by CĂPUȘE (1971), the morphology of the genitalia of this family needs reassessing. Only KUZNETSOV & STEKOLNIKOV (1978) have provided some new data and a general discussion in Polish is given in my series on the Lepidoptera of Poland (Lepidoptera, part 16, in print). One of the most important revisions of the Coleophoridae (TOLL, 1953), including the morphology data, is unfortunately also published in Polish and therefore poorly accessible to the majority of students. Later, the author (TOLL, 1962) writing in German, used the same terminology, but without any explanation. In this paper, I attempt to stabilize the terminology by discussing the terms used by the various authors and by presenting my conclusions as to the most correct terms (Figs 1-3).

The authors of works mentioned in this paper are accompanied by the date of publication at their first mention only. Subsequently, only the author is quoted. The particular parts of the genitalia are discussed in the order in which they are usually published in descriptions.

### Male genitalia (Figs 1, 2)

**TEGUMEN** : TOLL (1953) used the term *subscaphium* for this structure giving an incorrect and superficial description. He applied the term "tegumen" to the vinculum. PATZAK (1974) named it the *gnathos*. All other authors correctly interpreted this sclerite, but very few have mentioned the *pedunculi*, so distinctly developed in this family. Only CĂPUȘE (1971) recognized these structures, calling them *appendices angulares* and *peniculi* (cf. the figures on his pl. 30 and 31), whereas he used the term *pedunculi* only for their ventral parts.

**UNCUS** : A medio-terminal prominence, or fold, on the upper part of the tegumen was called the *uncus* by CĂPUȘE. Unfortunately, I have not been able to find this structure in Polish Coleophoridae.

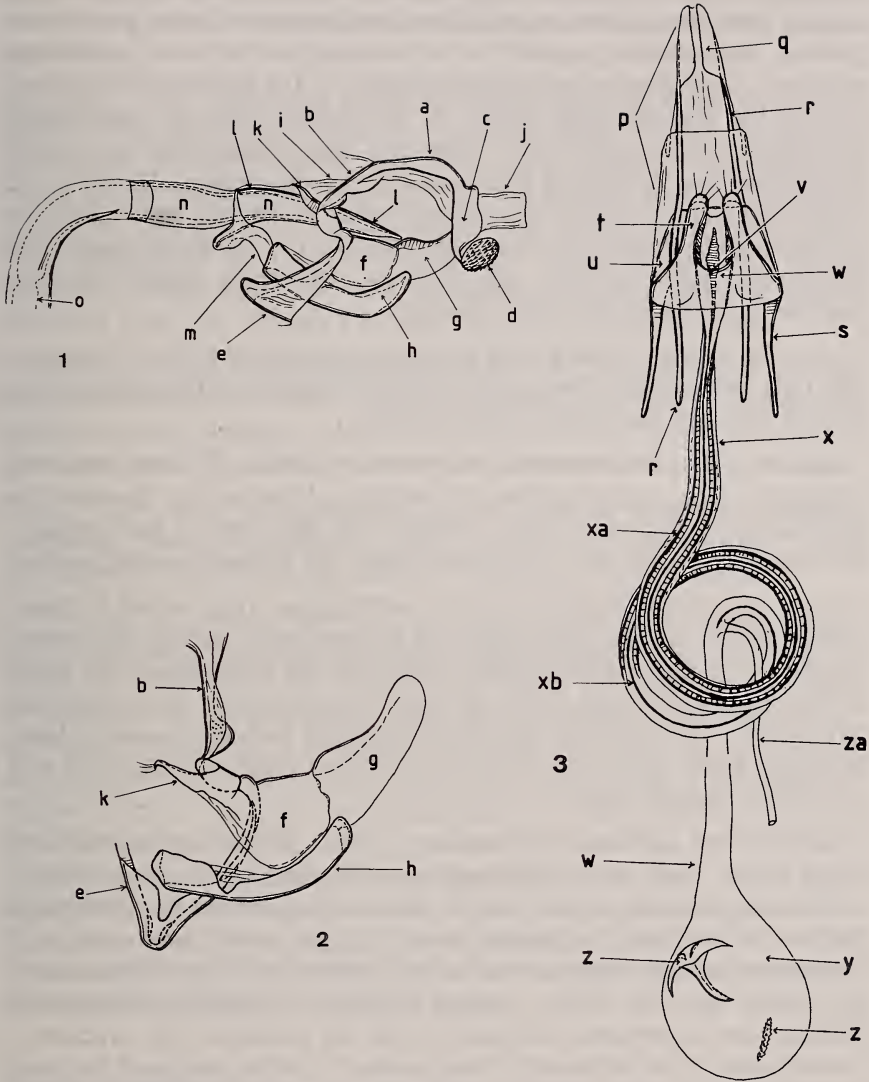


Fig. 1-3. 1. Male genitalia of *Coleophora* sp., lateral view ; 2. Valva complex and parts of 9th segment ; 3. Female genitalia of *Coleophora* sp. a- tegumen, b- pedunculus, c- gnathos, d- terminal portion of gnathos, e- vinculum, f- valvula, g- distal portion of valva, h- sacculus, i- anellus, j- tuba analis, k- transtilla, l- aedeagus, m- caulis, n- vesica, o- ductus ejaculatorius, p- ovipositor, q- papilla analis, r- apophysis anterior, s- apophysis posterior, t- sterigma, u- eighth tergite, v- ostium bursae, w- colliculum, x- ductus bursae, xa- lateral parts of dorsal sclerite of ductus bursae, xb- median rib of that sclerite, y- corpus bursae, z- signum, za- ductus seminalis.

**GNATHOS.** TOLL used this term only for the terminal part of this structure, the arms of which he called the *socii*. CĂPUȘE distinguished the two parts of the gnathos, but mistakenly applied for the terminal part the term androconial structure (“formation androconiale du gnathos”). The spines on the terminal part of the gnathos speak rather for its clasping and not androconial importance. BALDIZZONE (1987) used the term gnathos for its terminal portion only and he referred to the arms as the *subscaphium*. However, the *subscaphium* is a sclerite of the ventral portion of the *tuba analis*, the tube surrounding the distal part of the digestive tract. PATZAK distinguished only the terminal plate naming it the *socii*, and incorrectly applied the term gnathos to the distal area of the *tegumen*.

**SOCII :** The *socii* are missing in all known representatives of the *Coleophoridae*, their tactile function being performed by the bristles of the gnathos arms. For the incorrect use of this term see above.

**VINCULUM :** TOLL misinterpreted this structure, calling its dorsal arms the *tegumen* and the ventral portion the *vinculum*. However, for the latter the term *saccus* is reserved. CĂPUȘE correctly used this term, at least partially, and introduced a new term, the *postvinculum*, for its ventro-caudal portion.

**VALVA :** All authors subdivide this into several parts. TOLL named its distal, usually slender part, the *valva* itself, and its most apical portion the *corona*. However, it is hardly distinguishable. Moreover, the term *corona* only refers to the *setae* situated at the end of the *valva*. CĂPUȘE used for TOLL’s *valva* the term *valvula*. The *sacculus* is correctly named in all discussed papers, at least, in a wider sense, i.e. the whole ventral sclerotized structure of the *valva*, and not only its ventral edge.

**VALVULA :** TOLL and some other authors, e.g. BALDIZZONE, applied this term to the dorsal, more or less differentiated (and sclerotized) part of the disc of the *valva* extending ventral even as far as to the *sacculus*. Its ventral edge forms a delicate fold comparable to that in some other *Lepidoptera* (e.g. *Tortricidae*) and the outer portion extends posteriorly. The proximal area of the *valvula* does not usually produce any fold or process resembling the *pulvinus*, and a membrane connects it with the *transtilla*. This structure is characteristic of the advanced *Coleophoridae*. CĂPUȘE proposed the term *paravalvula* for it, using “*valvula*” for the distal portion of the *valva*. TOLL’s interpretation seems correct as the structure is probably homologous with the original *valvula* (PIERCE, 1914) of the *Geometridae*.

**TRANSTILLA :** This structure is rarely fully developed in the *Coleophoridae* and usually consists of two arms originating in the disc of the *valva*. KUZNETSOV & STEKOLNIKOV (1978) used the term *transtilla* correctly, but then (1984) introduced the term *hemitranstilla* which is synonymous with



the labis (one of the arms of the subdivided transtilla). CĂPUȘE proposed an unnecessary new term, the pons transtillarum, for non-divided, typical transtilla.

**ANELLUS** : This is the entire membrane surrounding the aedeagus, bearing various, often sclerotized structures. TOLL, followed by CĂPUȘE applied the term to the structures situated ventrally to the aedeagus, usually called the caulis. KUZNETSOV & STEKOLNIKOV (1978) used the term for the membranous structures. They called the ventral sclerite of the anellus the fultura in which they distinguished the ventral rib called the "median comb". That ventral structure is usually called the caulis. It connects with the phallus, forming an indistinct zone, and through a peculiar articulation with the valvae.

**AEDEAGUS** : Partially correctly interpreted by TOLL, who, however, did not recognize its structure in the advanced species of *Coleophora*. CĂPUȘE also applied the term aedeagus only to its sclerotic parts and only KUZNETSOV & STEKOLNIKOV (1978) correctly described and illustrated the whole complex.

**VESICA** : TOLL and PATZAK incorrectly named thus the outer tube extending proximally from the aedeagus. CĂPUȘE applied the term partially to the membranous areas of the aedeagus and in part to the vesica proper.

**DUCTUS EJACULATORIUS** : Used by CĂPUȘE, as in almost all systematic papers, for the outer tube surrounding the ductus ejaculatorius proper, or partially the vesica. He subdivided it into several parts. One of them, the lamina ductus, is interpreted as being situated inside the duct together with the cornuti. However, that structure is a sclerite of the outer tube (and not of the vesica as the cornuti are). CĂPUȘE introduced some French terms of the discussed system of ducts. These are: "canal glandulaire" for the distal part (or all) of his "ductus ejaculatorius", "bulbe ejaculateur" for a large proximal sack, "appendice de ductus" for a swung appendix of the latter, "canal non-glandulaire" for part of the vesica and the true ductus ejaculatorius and the latin term, scleriductus, for (?) the well-sclerotized proximal part of his "canal glandulaire". The problem of the ducts attached to the intromittent organ will be discussed in a separate paper.

### **Female genitalia (Fig. 3)**

**OVIPOSITOR** : TOLL named thus the papillae anales and the apophyses posteriores, excluding the remaining parts of that complex.

**PAPILLA ANALIS** : TOLL erroneously used the term lamina abdominalis for this structure.

**APOPHYSIS ANTERIOR and A. POSTERIOR** : TOLL used these terms reversely.

**STERIGMA** : TOLL used the term subgenital plate (in Polish). CĂPUȘE and then BALDIZZONE distinguished in it the lamella antevaginalis and lamella postvaginalis, however, these parts are usually hardly differentiated. CĂPUȘE, following NICULESCU, subdivided it into the lamella postvaginalis anterioris and lamella antevaginalis posterioris [sic !] and proposed a new term, lobules paragenitales, for the distal prominences of the sterigma and the term lamellulae pseudovaginales for a pair of folds extending lateroproximally from the ostium area or from the anterior edge of the sterigma. Two other (French) terms proposed by that author, i.e., plaque prévaginale (medio-anterior part of the sterigma) and plaque paravaginale (lateral part of the sterigma), and almost all of the above-mentioned terms can be easily replaced by simple descriptions of the sterigma.

**EIGHTH TERGITE** : CĂPUȘE used for this tergite the term lamella dorsalis.

**SINUS VAGINALIS** : CĂPUȘE applied this term to the concavity beyond the ostium bursae.

**COLLICULUM** : TOLL used for it the term introitus vaginae, whereas CĂPUȘE called the antrum the colliculum, however, in his interpretation the two are synonymous. BALDIZZONE applied the term infundibulum for the distal portion of the colliculum and PATZAK used the term ostium bursae for the whole colliculum. In the proximal part of the colliculum variably developed sacs sometimes occur which CĂPUȘE called the caeca vaginae.

**BURSA COPULATRIX** : TOLL used the term for the corpus bursae.

**DUCTUS BURSAE** : TOLL introduced two Polish terms for the sclerites of the ductus bursae, later named by CĂPUȘE as the bacilli and by PATZAK as "Seitengräten" and "Mittellinie". In all these papers these structures have been misunderstood. They are not inner sclerites but variably developed structures of the longitudinal invagination of the dorsal surface of the ductus bursae. In the median part they form a more or less distinct longitudinal rib extending anteriorly and posteriorly. In many species the sclerites are poorly developed or absent, but the dorsal invagination of the wall of the ductus is preserved.

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### Memorandum

Le présent numéro renferme une facture pour la cotisation 1990. Les membres qui ont déjà payé sont priés de la considérer comme sans objet. Les membres collectifs recevront une facture spéciale du Trésorier.

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