Descriptions of larvae of *Lymexylon navale* (LINNAEUS, 1758) and *Elateroides dermestoides* (LINNAEUS, 1761) (Coleoptera, Lymexylidae)

**Jiří Kolibáč**

Moravian Museum, Department of Entomology; Hviezdoslavova 29a, 627 00 Brno, Czech Republic; e-mail: ento.koli@volny.cz


Larvae of *Lymexylon navale* (LINNAEUS, 1758) and *Elateroides dermestoides* (LINNAEUS, 1761) are described and some morphological characters (especially the mouth parts and cranium) are figured.

**Key words.** *Lymexylon navale* (LINNAEUS, 1758), *Elateroides dermestoides* (LINNAEUS, 1761), larvae, morphology, Coleoptera, Lymexylidae

The larvae studied have been known for as long as about 150 years (PFEIL 1859, REITTER 1911). A modern review of the morphology and taxonomy of the family Lymexylidae, with more detailed descriptions of the both larvae mentioned here, was published by WHEELER (1986). Nevertheless, his observation on larval morphology, especially the mouth-parts, differs somewhat from that in this communication.

The main aim of the paper presented is to form a base for a future comparison of Lymexyloidea and Cleroidea larval morphology. This comparison should be helpful for establishing of character state polarities needed for a study of the phylogeny of the Cleroidea.

**Larva of Lymexylon navale** (LINNAEUS, 1758)


**Description.** Body extremely slender and elongate, creamy whitish. Pubescence inconspicuous, only the first and ninth ventrites conspicuously pubescent. Body size of mature larva ca 24 mm.

**Head.** Head capsule (Fig. 1) sparsely pubescent, weakly pigmented. Gular area short (narrow), with two arms of tentorium running anteriorly, gular sutures absent. Narrow, weakly sclerotised “hypostoma” closes “gular cavity”, hypostomal rods very weakly marked. Frontoclypeal suture present, “clypeus” very narrow. Frontal sutures distinct, Y-shaped, arms straight. Epicranial stem (or endocarina) conspicuous. Ocelli (stemmata) absent, capsule perfectly eyeless.

This paper was supported by grant MK0CEZ00F2402.
Figs 1–2. *Lymexylon navale*, larva: 1, head capsule ventrally; 2, epipharynx.
Larvae of Lymexylidae

Epipharynx (Fig. 2) subtriangular, with long setae at apex. Tormal part composed of two short rods, horseshoe-shaped armature, and comb-like armature. Mandibles similar to those in *Elateroides dermestoides*, also with one robust chisel-shaped apical tooth, prostheca (lacinia mandibulae) absent, and mola armed with regular transverse rows of small spines (Fig. 3). Antennae small (but larger than those in *E. dermestoides*), two basal segments widely oblong, sensory appendix absent (Fig. 4). Maxillolabial complex as shown in Fig. 5: maxillary palpae 4-segmented (palpifer as large as the subsequent segment). Maxillary mala moderately sclerotised, distinctly divided into galea and lacinia. Thorn-like setae occur at inner side of lacinia, truncate setae at apex of both galea and lacinia, and pedunculate seta in middle of galea (Fig. 5). Prementum and mentum inconspicuous, probably membraneous. Labial ligula transparent, conspicuously pubescent at margins. Hypopharyngeal sclerome distinct (not figured in detail), similar to that in *E. dermestoides* (see Fig. 9).

Thorax. Prothorax enlarged, pronotum forms large hump, laterally covered in small spines. All three nota more sclerotised than abdominal segments but notal sclerites not differentiated and not pigmented. Ventral part of thoracic segments also pale, without distinct sclerites. Spiracles annular. For detailed description and drawings of legs see Wheeler (1986).

Abdomen. Abdominal segments extremely elongate, pubescence absent excepting ventral part of the ninth segment. Anterior abdominal spiracles annular. Dorsal side of the ninth segment with small spines and small but distinct urogomphi. Spines also present along rectum (segment X).


Description. Body whitish to light brown. Pubescence inconspicuous, only minute ciliation present. Body size of mature larva ca 13 mm.

Head. Head capsule (Fig. 6) minutely ciliate, moderately pigmented. Gular area short (narrow), with two arms of tentorium running anteriorly, gular sutures absent. Narrow, weakly sclerotised “hypostoma” closes “gular cavity”, hypostomal rods absent. Frontoclypeal suture present. Frontal sutures fine, Y-shaped, arms straight. Epicranial stem (or endocarina) present, fine and weakly pigmented. Ocelli (stemmata) absent, capsule completely eyeless.

Antennae minute, scarcely visible, two basal segments oblong, sensory appendix absent (Fig. 7). Mandible with one robust chisel-shaped apical tooth, conspicuous prostheca (lacinia mandibulae) absent (Fig. 8). Mandibular mola large and wide, with regular transverse rows of small spines. Hypopharyngeal sclerome distinct, subtriangular, barely sclerotised and pigmented, densely covered in short pubescence (Fig. 9). Its appendages composed of robust plate and two long, thin, curved rods. Maxillolabial
Larvae of Lymexyliidae

Figs 6–9. *Elateroides dermestoides*, larva: 6, head capsule ventrally; 7, antenna; 8, mandible ventrally; 9, hypopharyngeal sclerome.

complex as shown in Fig. 10: maxillar palpae 3-segmented (palpifer absent). Maxillae moderately sclerotised, with thorn-like setae on the inner side and pedunculate seta near to apex of mala. Galea and lacinia not separated. Prementum narrow, curved, without incision, labial mala (ligula) small, finely and densely pubescent. Mentum narrow but conspicuous. Epipharynx shortly and densely pubescent, subtriangular. Tormal part damaged in specimens studied, probably similar to that in *Lymexylon navale*. (For comparison see Wheeler 1986.)

**Thorax.** Prothorax enlarged, pronotum forms large hump. All three nota more sclerotised than abdominal segments but notal sclerites not differentiated and not pigmented. Ventral part of thoracic segments also pale, without distinct sclerites. Pubescence of thorax minute. Spiracles annular. For detailed description and drawings of legs see Wheeler (1986).

**Abdomen.** Abdominal segments weakly transverse, pubescence minute excepting the ninth segment with conspicuous fine hairs (Fig. 12). Anterior abdominal spiracles annular (Fig. 11). Dorsal side of the ninth segment transformed to large sclerotised plate armed with spines at margins (Fig. 12). Urogomphi not differentiated, probably blend with the plate.

Larvae of Lymexylidae

Discussion

WHEELER (1986) did not mention some conspicuous characters such as, for example, the presence of the frontal sutures, endocarina (both in the head capsule), pedunculate seta (in maxillary mala), and annular spiracles (in thorax and abdomen); all of which are very important to the taxonomy and phylogeny of the Cucujiformia. It is also possible that some of the character states mentioned change during larval development. For example, the antennae of the mature larvae of both the species studied by myself were without the sensory appendix (the digitiform organ in Wheeler’s terminology). Wheeler observed it in *E. dermestoides* but not in *L. navale*. He also mentions a reduction of the number of antennal segments from 3 to 2 in *E. dermestoides* during development; however, I observed 3-segmented antennae in the last instar of this species.

*L. navale* seems to be more primitive than *E. dermestoides* in most of the observed characters. These plesiomorphies are especially the maxillary mala divided in galea and lacinia and maxillary palpae 4-segmented (palpipter distinct). Both species have their own adaptive characters as e.g. the antennae minute and 9th abdominal segment strongly modified in *E. dermestoides*, the body extremely elongate and slender in *L. navale*. Both species are eyeless, with conspicuously widened prothorax.


Fig. 11–12. *Elatroides dermestoides*, larva: 11, the first abdominal spiracle; 12, abdominal segments VIII–X dorsolaterally.
Acknowledgements

My sincere thanks are due to Drs Hella Wendt and Manfred Uhlig (Humboldt Universität, Museum für Naturkunde, Berlin) for the loan of the *Elateroides dermestoides* larvae and Jiří Vávra (Ostrava) for the larva of *Lymexylon navale*.

References

