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## The larva of *Lype auripilis* McLachlan, 1884

(Insecta, Trichoptera, Psychomyiidae)

Rufino Vieira-Lanero, Marcos A. González and Fernando Cobo

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The larva of *Lype auripilis* McLachlan, 1884, is described for the first time and the most important diagnostic features are illustrated. The colour pattern of the head is the chief character for a clear differentiation from the remainder Iberian species of the genus. Some zoogeographical and ecological notes are included.

Rufino Vieira-Lanero, Marcos A. González & Fernando Cobo, Departamento de Biología Animal, Facultad de Biología, Universidad de Santiago. 15706 Santiago de Compostela, Spain.

### Introduction

Larvae of *Lype* species construct galleries on submerged wood in streams, rivers, ponds and lakes. Larvae of the genus *Lype* can be separated from other European *Psychomyiinae* – *Psychomyia* Latreille, 1829 and *Tinodes* Leach, 1815 (*Metatype* Klapalek, 1898 being synonymized with *Psychomyia* by Malicky, 1995) – using the key of Edington & Hildrew (1995) by the following combination of morphological features: pronotum without black thickening in posterior-lateral position and anterior part of coxopleurite of first leg with only one vertical black bar.

According to the inventory given by González et al. (1992), the genus *Lype* McLachlan, 1878, is at present represented in the Iberian Peninsula by three species: *L. phaeopa* (Stephens, 1836), known from Europe and Iran, *L. reducta* (Hagen, 1868), a species widely distributed throughout Europe, North of Africa and SW Asia and *L. auripilis* McLachlan, 1884, a species only known from SW Europe. Within this group, *L. auripilis* is the only which was hitherto unknown in the larval stage, whereas a number of descriptions are available for the other two species (e.g. Hickin 1967, Edington & Alderson 1973, Edington & Hildrew 1995, Waringer & Graf 1997). Recently, some data on larval distribution and habitat of *L. phaeopa* and *L. reducta* are presented by Wiberg-Larsen (1995).

In recent years, larvae and pupae of *Lype* spp. have been collected from streams in the north-western quarter of the Iberian Peninsula. Larval exuviae of *Lype auripilis* were obtained from larvae reared in the laboratory to the adult stage and from mature pupae with distinct genitalia collected in several field samples, thereby ensuring the association between larval and adult specimens. In this paper we are going to describe the final instar larvae of this species. Setal nomenclature and terminology follows Wallace et al. (1990) and Williams & Wiggins (1981).

## Description of the final instar larva

Material examined: 23 fifth instar larval exuviae of 8♂♂ and 15♀♀ of laboratory reared pupae and 258 larvae of fifth and previous instars. All from Galicia, NW of Spain.

### Description

Body length. Up to 11 mm.

Head capsule (Figs 1, 2). Subsquare, slightly longer than wide; length 0.71-0.91 mm (mean 0.81 mm, N = 12), width 0.57-0.77 mm (mean 0.68 mm, N = 12). Head with a broad, dark band which runs transversely across the dorsal surface; large muscle attachment spots on dark areas of genae. Area lateral to the anterior branches of the frontal sutures, periocular area and anterior area of frontoclypeal apotome light yellow; central part dark brown, area near occipital foramen light yellow. Posterior part of frontoclypeal apotome (Figs 2, 7) with a characteristic dark horseshoe-shaped area and a transverse row of 3 large light muscle attachment spots. Transverse band separated from the adjacent dark area of the frontoclypeal apotome by a thin, V-shaped, light yellow area. Ventral surface of the head capsule (Fig. 1) light yellow with a thin, irregular, darker area alongside the ventral ecdysial line; the spots on the ventral surface are almost indistinct. Seta 18 present. Labrum broad and short (Fig. 6); anterior margin membranous, almost straight, with short hairs laterally and even shorter frontally, with 6 pairs of setae and 1 unpaired and 2 pairs of setal pits.

Anterior ventral apotome V-shaped (Fig. 1), arms extended; posterior ventral apotome absent. Paired submental sclerites subrectangular, separate, bearing 1 seta each.

Mandibles (Fig. 8). Approximately as long as they are wide, upper blade of left mandible with a large tooth in addition to the apical tooth; projecting part of the lower blade with 3 short teeth, the further back blunt; there are two setal brushes of indented setae on the inner edge, the further back with finer setae than the anterior one. A little area over the dorsal side of each mandible with small comb-like spines. Apex of right mandible with 2 large teeth on the upper and lower blades; lower blade with 1 additional, indistinct blunt tooth.

Pronotum. Black, greyish brown, slightly broader than head, with a light stripe along the anterior and lateral margins (Fig. 4). Each half of sclerite subsquare in dorsal view (Fig. 3), with four pale spots around base of setae: 2 median spots situated one slightly anterior to the other, and 2 lateral spots fused with the lateral stripe. Muscle attachment spots distinct. Median suture sinuous.

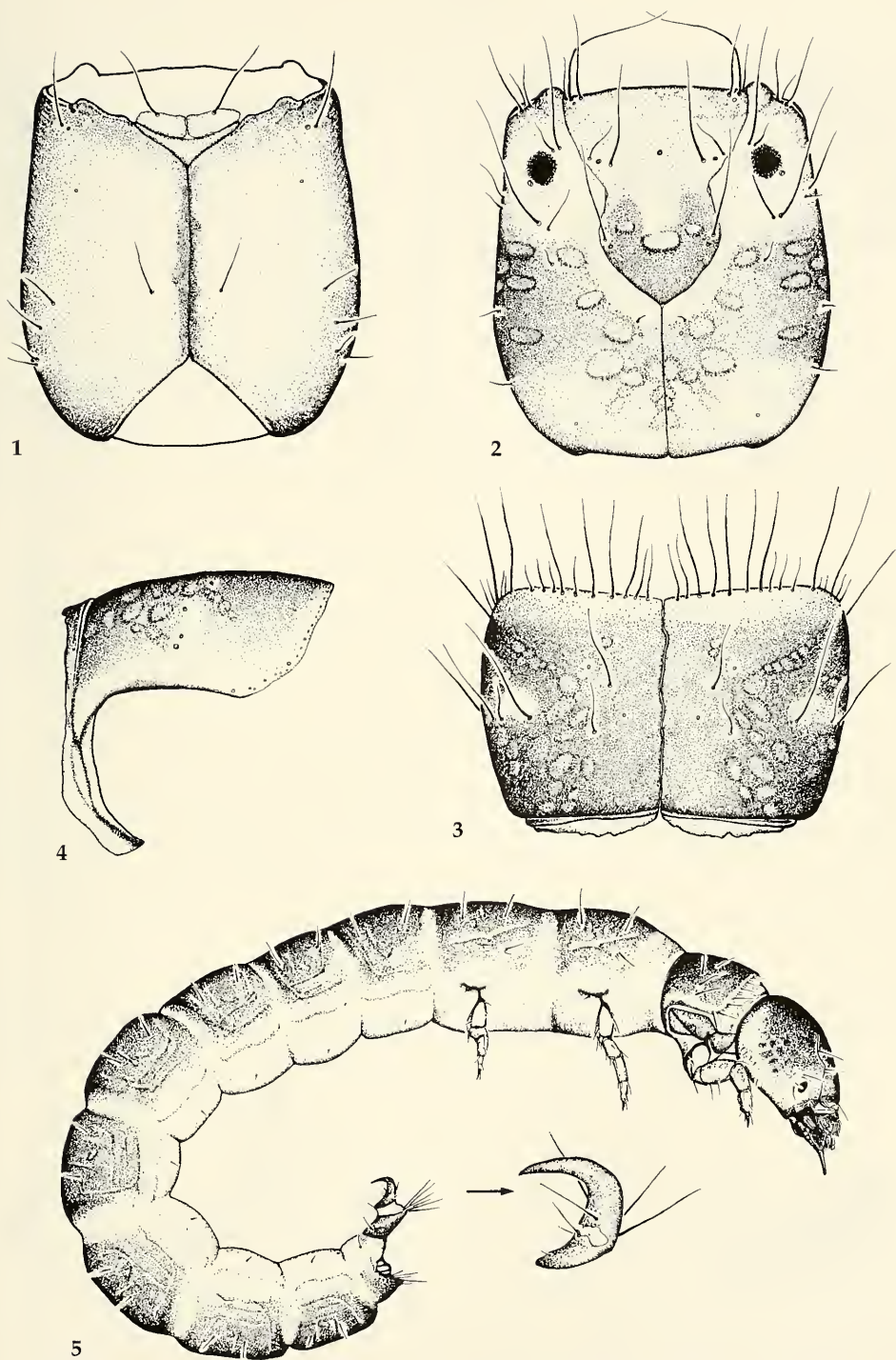
Meso- and metathorax. Membranous, broader than prothorax, with 3 groups of dorsal setae each: 1 seta at *sa*1, 3 setae at *sa*2, and 3 at *sa*3. Meso and metathorax and abdominal segments with broad dark band running longitudinally along dorsum (Fig. 5).

Propleuron (Fig. 5). With a single upward projecting black bar dorsal to the notch which bears the head of the coxa; thus, trochantin of the prothorax is separated from the propleuron by a single, well-marked suture. Meso and metapleura each a narrow sclerotized band (Fig. 10); with one seta in adjacent area.

Legs (Figs 9-14). Prothoracic legs concolorous with the pronotum, meso- and metathoracic legs lighter; only prothoracic legs with distinct muscle attachment spots; tarsal claws (Fig. 9, detail) of all legs with a single seta arising from a stout basal process. Prothoracic legs (Fig. 9) slightly longer and stouter than those of other segments, bearing dense brush along mesal margin of tarsus; inner side of trochanter, femur and tibia with 2, 1 and 1 feathered setae (Fig. 9, detail) respectively; tarsal segment without spurs, a feathered seta on distoventral edge. Meso- and metathoracic legs with three tarsal spurs. Mesothoracic legs with 1 feathered seta on inner side of both tibia (Fig. 11) and tarsus (Fig. 12). Outer side of metathoracic tibia (Fig. 14) with two spiny setae and inner side of coxa; trochanter, femur and tarsus with one feathered seta in addition (Fig. 13).

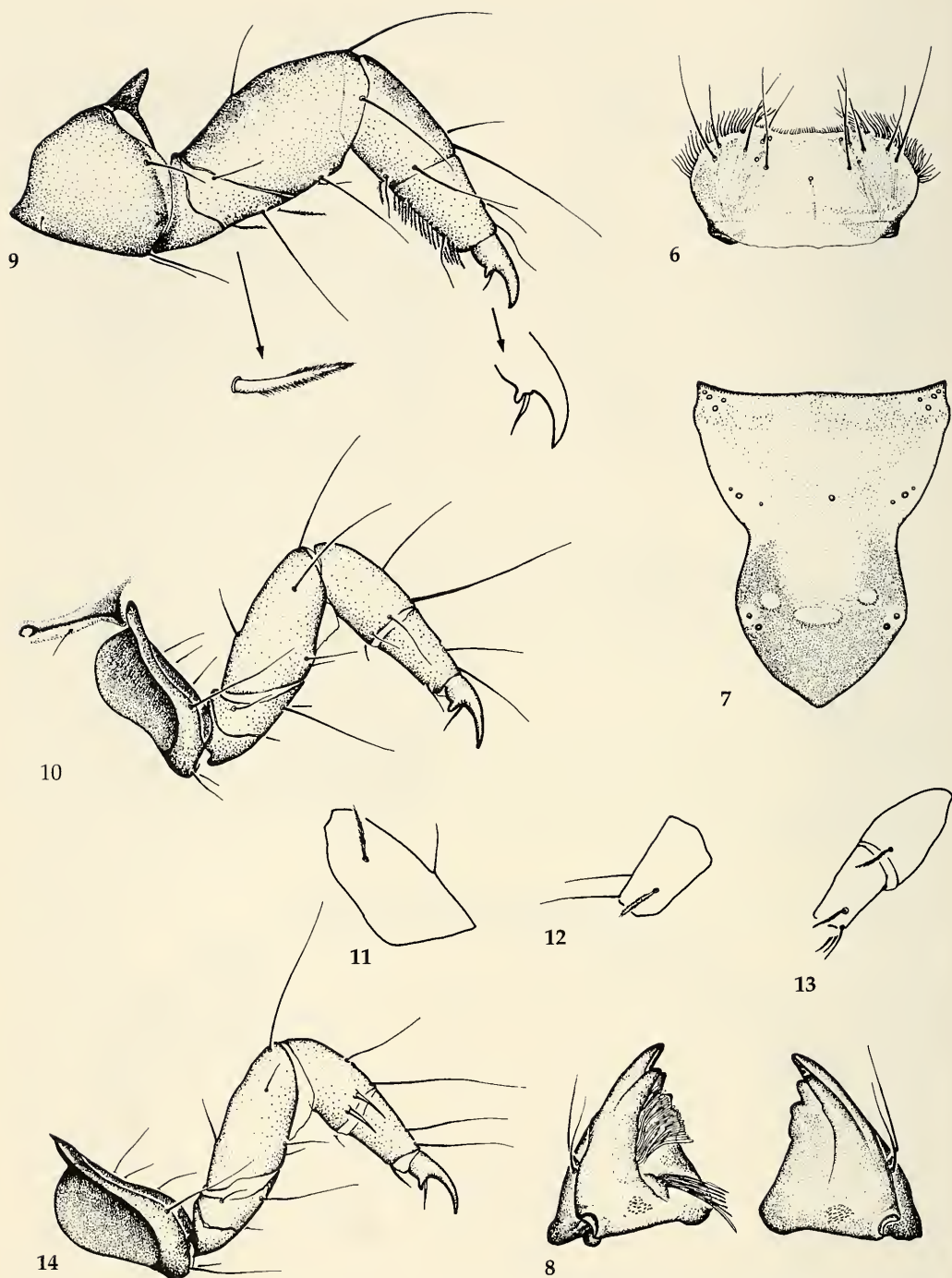
Abdomen. Dorsoventrally flattened, gills and lateral fringe absent; 5 anal papillae present, palmately arranged when extended. Abdominal segments I-VIII of similar length (Fig. 5); segments I-VII uniformly broad; segment VIII slightly narrower, convex posteriorly in dorsal view; segment IX the narrower. Segments I-VIII each bearing 2 pairs of setae dorsally, 1 pair laterally and 1 pair ventrally. Segment IX with a row of 4 long setae dorsally and two shorter in addition arising between the inner and the outer ones; a pair of lateral setae and two ventral setae.

Sclerite of anal proleg. Light brown; a row of distinct muscle attachment spots along the surface; anal claw (Fig. 5, detail) strongly hooked; no ventral teeth on claw.



Figs 1-5. *Lype auripilis*; last instar larva. 1. Head, ventral view. 2. Head, dorsal view. 3. Pronotum, dorsal view. 4. Pronotum, lateral view. 5. Larva, habitus lateral and detail of right anal claw.





Figs 6-14. *Lype auripilis*; last instar larva. 6. Labrum, dorsal view. 7. Frontoclypeal apotome, dorsal view. 8. Mandibles, dorsal view. 9. Prothoracic leg, posterior face, and detail of tarsal claw and the proximal feathery seta of the inner face of trochanter. 10. Mesothoracic leg, posterior face. 11. Mesothoracic tibia, feathery seta of the inner side. 12. Mesothoracic tarsus, feathery seta of the inner side. 13. Metathoracic tibia and tarsus, feathery setae of the inner side. 14. Metathoracic leg, posterior face.

## Discussion

The larvae of three Iberian species, *L. auripilis*, *L. phaeopa* and *L. reducta* have been examined. In our material – which includes larvae of *L. reducta* and *L. phaeopa* from several European countries (Spain, Poland, Denmark, England, Austria) – we found that the most useful character for the recognition of *Lype* species is the colour pattern of the head, especially the colour pattern of the frontoclypeal apotome. The band of pigment across the dorsal side of the head is darker in *L. reducta* (cf. Moretti 1983, fig. 23 S, Edington & Hildrew 1995, fig. 89, Waringer & Graf 1997, figs 5 and 6, pg. 119) and *L. auripilis* and consequently divides the frontoclypeal apotome into posterior dark and anterior light zones. By contrast, no such clear division is apparent in the *L. phaeopa* we have examined (cf. Moretti 1983, fig. 23 Q, Edington & Hildrew 1995, fig. 90) and in most specimens the frontoclypeal apotome is virtually uniform in colour (cf. Waringer & Graf 1997, fig. 7, pg. 119).

The separation of *L. auripilis* and *L. reducta* can be made by examining the dark area of the frontoclypeal apotome. This dark area in *L. reducta* is in the form of a small regular triangle whereas in *L. auripilis* it is horseshoe-shaped, with two lateral branches projected anteriorly. Another character is concerned with the colour of the pronotal lateral margins. In *L. auripilis* are lighter and fused with the two pale areas in the base of the lateral setae. In addition in *L. auripilis* the ventral surface of the head capsule (Fig. 1) is light yellow with a thin, irregular, darker area alongside the ventral ecdysial line (usually less well defined in *L. phaeopa* and *L. reducta*) and the spots are almost indistinct.

## Habitat and distribution

*L. auripilis* constructs galleries up to 50 mm long on submerged wood debris (branches, logs) in calm and shallow areas of streams and rivers. The walls of the galleries are built of wood fragments and sand grains held together with silk. If pieces of rotting board are available, the larvae congregate on these, channelling in the softer spring wood leaving the more resistant summer wood to form the sides of the shelter.

In the Iberian Peninsula *L. auripilis* has been reported only from low and midland rivers and streams (10–600 m a.s.l.) of the western half (González 1988, González et al. 1992, Terra 1994). *L. auripilis* is the most abundant species of this genus in Galicia, whereas only some isolated individuals of *L. phaeopa* have been caught in the same area, all of them from large lowland rivers. Within this area, *L. reducta* has been reported only from Sierra do Caurel (Lugo). Adults have been collected from March to October (Terra 1981, González 1988).

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Autor(en)/Author(s): Vieira-Lanero Rufino, Gonzales [González] Marcos A., Cobo Fernando

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