

SPIXIANA	Supplement 11	143–148	München, 30. Dezember 1985	ISSN 0177-7424
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A larval diagnosis for the subfamily Buchonomyiinae and the genus *Buchonomyia* with a description of the 1st instar larva of *Buchonomyia thienemanni* Fittkau

(Diptera, Chironomidae)

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ASHE, P. (1985): A larval diagnosis for the subfamily Buchonomyiinae and the genus *Buchonomyia* with a description of the 1st instar larva of *Buchonomyia thienemanni* Fittkau (Diptera, Chironomidae). – Spixiana, Suppl. 11: 143–148.

The 1st instar larva of *Buchonomyia thienemanni* Fittkau is described and figured. A larval diagnosis for the subfamily Buchonomyiinae and the genus *Buchonomyia* is given. Important diagnostic features of the larva are: absence of a premandible; SII setae of labrum long, simple and arising from well developed pedestals; mentum with 13 teeth; mandible with 7 teeth and procercus reduced and bearing 11 apical setae.

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Introduction

The immature stages of *Buchonomyia* have been sought since the original description of the genus by FITTKAU (1955). BRUNDIN (1966: 425) states: "A considerable hindrance for further progress [on subfamily phylogeny] is lacking information of the larvae and pupae of *Buchonomyia* . . ." Adult material of *Buchonomyia* from northern Burma was available to BRUNDIN (loc. cit.) and during his extensive travels he visited East Himalaya mainly to look for the immature stages but he was not successful. Following the discovery of *B. thienemanni* by the River Flesk in S. W. Ireland (MURRAY 1976) intensive investigations were undertaken to search for the immatures which resulted in the finding of the pupa (MURRAY and ASHE 1981). Attempts to find the 4th instar larvae in the river by collecting and rearing a range of mature larvae from various habitats have not been successful. However, in 1981 a mated adult female was captured adjacent to the River Flesk and 1st instar larvae hatched from the egg-mass that was laid. The eggs and egg-mass of *B. thienemanni* have already been described (ASHE and MURRAY 1983). Adult females were collected from a second Irish locality, the River Nore, Co. Kilkenny, in August 1982 and additional 1st instar larvae were obtained. Attempts to rear the larvae to 2nd or 3rd instar on different substrates in petri dishes were not successful. With the description of the larva of *B. thienemanni* given here, the only remaining subfamily in which the immatures are unknown is the recently described Chilenomyiinae (BRUNDIN 1983). The diagnoses given here for the subfamily Buchonomyiinae and the genus *Buchonomyia*, based on the 1st instar larvae of *B. thienemanni*, will probably require some modification when later instars are discovered. No attempt has been made here to assess the phylogenetic position of the Buchonomyiinae from the data provided by the larva but a complete discussion on this is given elsewhere (MURRAY and ASHE 1985).

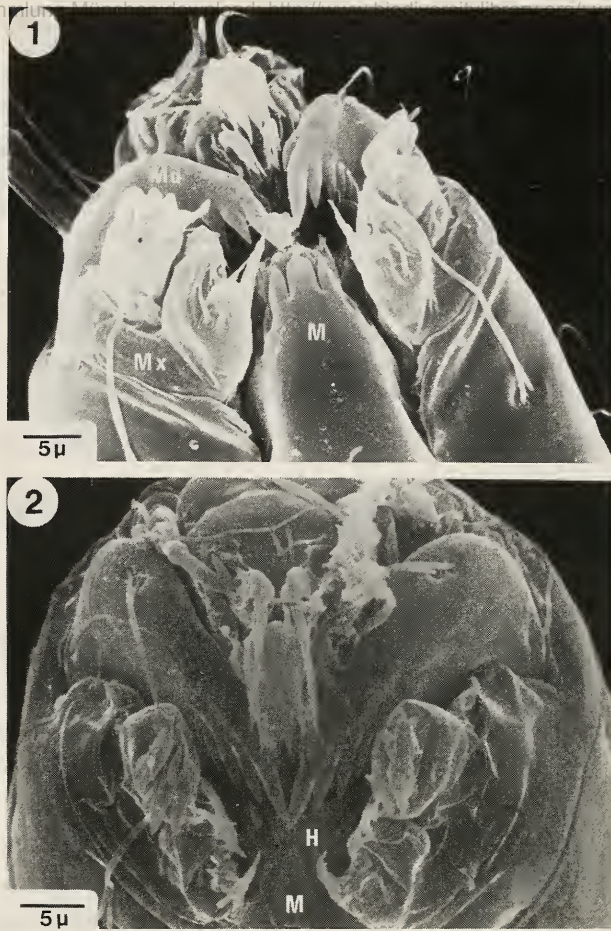


Plate 1-2. *B. thienemanni*. 1: larval head, ventral view. 2: larval head, frontal view.

Material and Methods

The 1st instar larvae of *B. thienemanni* described here were hatched from egg-masses laid by mated adult females. A more detailed account of the methods used to obtain 1st instar larvae is given elsewhere (ASHE and MURRAY 1983). Attempts to rear the larvae beyond the 1st instar stage were unsuccessful.

Due to the small size of the larvae it was necessary to use the scanning electron microscope (SEM) to show various diagnostic features of the head and body. The SEM technique used for the larvae is essentially the same as that which has been described in detail for the eggs of *B. thienemanni* (ASHE and MURRAY 1983). In the drying process the larval abdomen invariably collapsed to a greater or lesser degree whereas the larval head was protected from serious collapse by its chitinous make-up.

The terminology and abbreviations used are in accordance with the glossary of SAETHER (1980).

An = Antenna	LR = Labral rod	Pd = Pedestal
ChB = Chaetulae basales	M = Mentum	PE = Pecten epipharyngis
ChL = Chaetulae laterales	Md = Mandible	SI-III = Sensillae I-III
H = Hypopharynx	MP = Maxillary palp	
LO = Lauterborn organ	Mx = Maxilla	

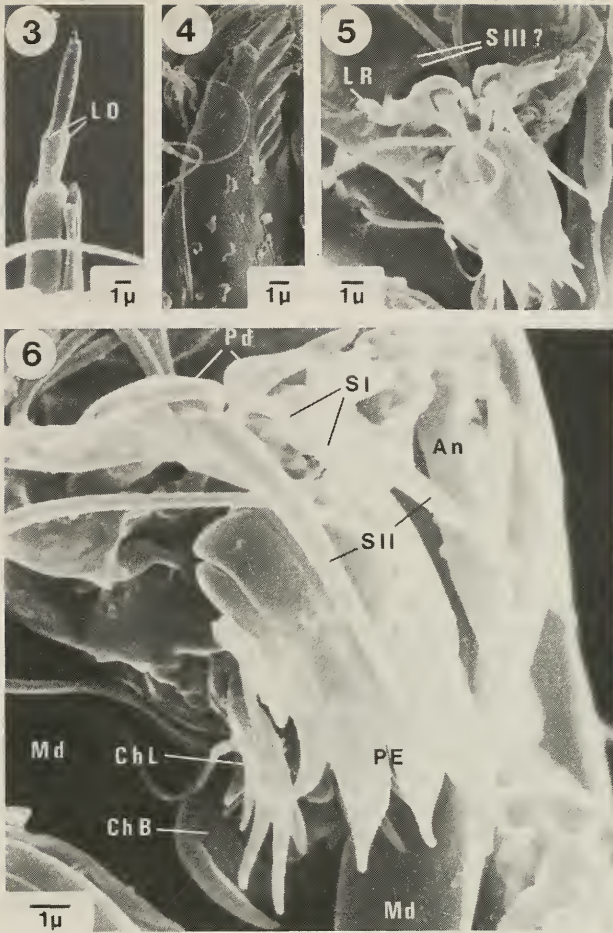


Plate 3-6. *B. thienemanni*. 3: antenna, segments 2-5. 4: mandible. 5: labral region, frontal view. 6: labral region, side view.

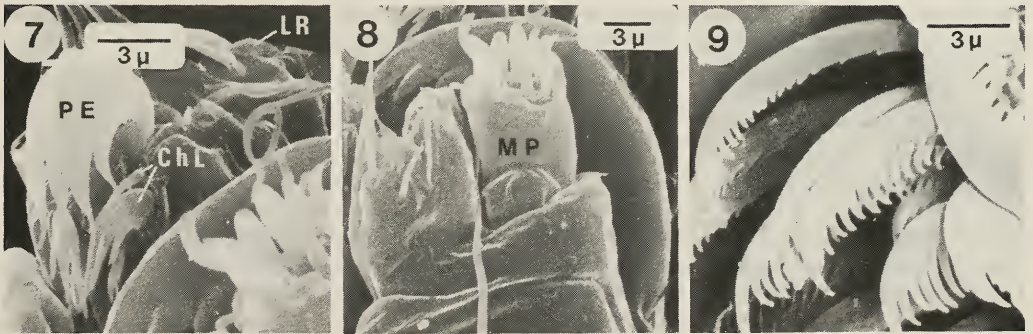


Plate 7-9. *B. thienemanni*. 7: detail of labral region. 8: maxilla with mandible partly visible. 9: claws of anterior parapods.

Subfamily Buchonomyiinae

Larval diagnosis (1st instar).

Head. Eye spot single. Antenna five segmented, non-retractile. Antennal blade and accessory blade present and well developed, Lauterborn's organs weak. SI and SII setae of labrum simple, position and presence of SIII and SIV setae uncertain, labral rod present. SII setae curved, well developed and arising from marked pedestals. Pecten epipharyngis consists of five well developed lamellae. Chaetulae laterales and chaetulae basales present. Premandible absent. Mandible with seven teeth, the first tooth is displaced laterally and hidden by the second tooth. Seta subdentalis and seta interna present. Mentum with one median tooth and six pairs of lateral teeth. Ventromental plates absent.

Abdomen. Anterior and posterior parapods well developed, separated and bearing claws. Body setae simple and distinct. Procerci weakly developed, each bearing 11 apical and one lateral setae. Anal tubules present.

Genus *Buchonomyia*

Larval diagnosis (1st instar).

Head. Head capsule dark brown. Eye spot single. Antenna five segmented, approximately two-thirds the length of the mandible, first segment short with a single seta in the apical half, third segment appreciably shorter than fourth, fifth segment very small. Antennal blade equal in length to the second abdominal segment, accessory blade slightly shorter. Ring organ in middle of 1st segment, Lauterborn's organs weak. SI and SII setae of labrum simple, SII strongly developed on large pedestals, about twice the length of the SI. Presence and position of SIII and SIV setae uncertain, labral rod present. Pecten epipharyngis consists of five well developed lamellae, both outer lamellae slightly smaller than the three median lamellae. Chaetulae laterales and chaetulae basales present. Premandible absent. Mandible with seven teeth, the first tooth is small, displaced laterally and hidden by the larger second tooth, seta subdentalis and seta interna present. Maxilla well developed, appendix seta present. Maxillary palp apparently three segmented with a large basal segment bearing several sensillae. Mentum with a single median tooth and six pairs of lateral teeth becoming consecutively smaller. Ventromental plates absent. Hypopharynx well developed and distinct.

Abdomen. Body setae simple, dark, long and conspicuous. Abdominal segments appear greenish in colour, pigment mostly confined to certain areas giving a spotted appearance, otherwise hyaline. Anterior and posterior parapods well developed, divided and bearing numerous claws. Claws of anterior parapods serrated, those of posterior parapods simple. Procerci very reduced, with 11 apical setae of varying lengths and one lateral seta. Two pairs of anal tubules present.

Buchonomyia thienemanni

Larval description (n = 6).

Total length 0.40–0.47, 0.44 mm. Head capsule (Plate 1, 2) 0.105–0.117, 0.115 mm long. Labro-epipharyngeal region and frontal apotome (side view) as in Fig. 1 A. Antenna (Fig. 1 B, Plate 3), lengths of antennal segments (μ): 4.6–5.5, 4.9; 9.1–10.5, 9.6; 3.2–3.6, 3.5; 4.6–5.5, 5.2; 2.3–2.7, 2.5. Antennal ratio: 0.21–0.28, 0.23. SI, SII and SIII(?) setae of labrum simple, SII setae are long, broad and curved and arise from well developed pedestals (Plate 5, 6). Pecten epipharyngis consists of five lamellae, outer lamellae slightly smaller than median lamellae (Plate 6, 7). Chaetulae basales (Plate 6) and chaetulae laterales present (Plate 7). Mandible (Fig. 1 C, Plate 4) 33.7–38.2, 34.5 μ long. Maxilla (Plate 8) and mentum (Fig. 1 D, Plate 1) as in generic diagnosis. Anterior and posterior parapods well

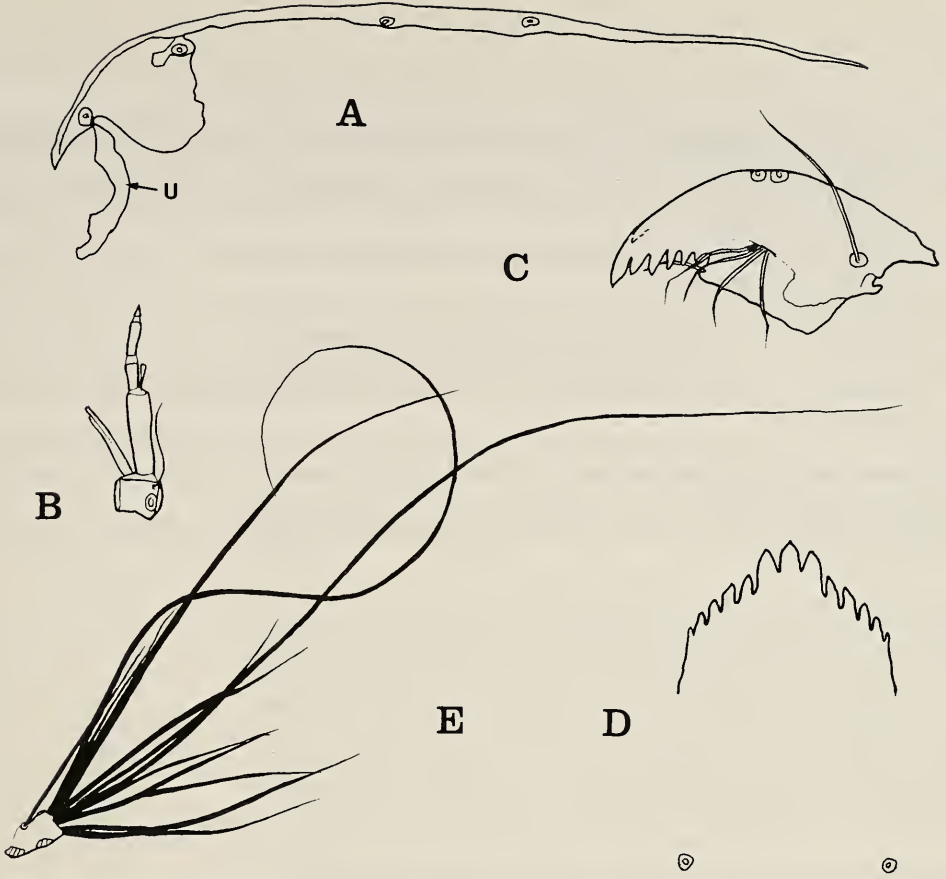


Fig. 1. *B. thienemanni*. A, labro-epipharyngeal region and frontal apotome (side view) (U = Ungula); B, antenna; C, mandible; D, mentum; E, procercus.

developed. Claws of anterior parapods serrated (Plate 9). Anal tubules present. Procerci 7.3μ high, each bearing 11 apical setae and one lateral seta (Fig. 1E), longest apical seta 123μ .

Acknowledgements

I wish to express my thanks to Dr. D. A. Murray, Zoology Department, University College, Dublin 4, Ireland and Dr. P. S. Cranston, Entomology Section, British Museum (Natural History), London, England for discussion and criticism of the manuscript; the Royal Irish Academy for the award of a Praeger Grant to defray field expenses during July and August 1981; Mr. Barry Cregg, SEM Unit, Agricultural Science, University College Dublin, for advice in preparing specimens for scanning and Mr. Robert French, Zoology Department, University College Dublin, who carried out the scanning electron microscopy and prepared the photographic plates.

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