

HYDRAENIDAE:
III. Description of the third instar larva of
***Ochthebius* (s.str.) *gonggashanensis* JÄCH**
(Coleoptera)

J.A. DELGADO

Abstract

The third instar larva of *Ochthebius* (s.str.) *gonggashanensis* JÄCH (Coleoptera: Hydraenidae) is described and illustrated, including a detailed analysis of its chaetotaxy and porotaxy. Comparative notes on the morphology of this larva with those of two other species of *Ochthebius* s.str. already described, are given. The specimens used in this study were collected with adults of *O.* (s.str.) *gonggashanensis* and have been identified as such by association.

Key words: Coleoptera, Hydraenidae, *Ochthebius*, larvae, chaetotaxy, China.

Introduction

Ochthebius LEACH is among the most speciose genera of Hydraenidae, with 41 species recorded from Mainland China alone (see JÄCH 2003).

In terms of larvae, only two species of the subgenus *Ochthebius* s.str. have been thoroughly described: *O.* (s.str.) *auropallens* FAIRMAIRE of the *O. marinus* species group (DELGADO & SOLER 1997) and *O.* (s.str.) *danjo* NAKANE of the *O. punctatus* species group (DELGADO & MATSUI 2000). The latter descriptions suggest that, despite the fact that the larvae of *Ochthebius* s.str. share a basic chaetotaxic pattern (DELGADO & SOLER 1997), there is a certain degree of variation among the chaetotaxy of different species groups which could be useful in studying phylogenetic relationships. That variation mainly refers to the length and shape of the egg bursters and the setal pattern of the first instar larva, as well as the presence or absence of subprimary and secondary setae in the second and third instars.

In the present paper the larva of a second species of the *O. punctatus* species group, *Ochthebius* (s.str.) *gonggashanensis* JÄCH, is described, which provides a step forward towards a better understanding of the larval morphology in the genus *Ochthebius*, both at the subgenus and the species group levels.

Material and methods

Material examined:

C H I N A: SICHUAN: 12 third instar larvae from Ganzi Tibet Autonomous Prefecture, Daxue Shan, Gongga Shan, Hailuoguo Glacier Park, 102°04'E / 29°36'N, about 1 km above Camp I, 2100 m a.s.l., 28./31.V.1997, leg. A. Pütz.

All the specimens are deposited in the Naturhistorisches Museum Wien and in the research collection of the author held at the Departamento de Zoología y Antropología Física, Facultad de Biología, Murcia, Spain.

These larvae were collected together with adults of *O.* (s.str.) *gonggashanensis* and identified as such by association. All the specimens appear to be third instars of the same species. Seven larvae first were studied in alcohol, later cleared in KOH, stained with acid fuchsin, and then mounted on slides in Canada Balsam following the technique published by PALMA (1978). The remaining specimens were mounted on slides in Hoyers mounting medium. Drawings were made with a camera lucida attached to a compound microscope. The terminology and format used in this paper are the same as those in DELGADO & SOLER (1997) and DELGADO & PALMA (1998).

Abbreviations used in Figs. 3 - 12:

A1-4	anterior setae	L11-2	labral lateral setae
C1-5	campaniform sensilla	Lm2	labral marginal setae 2
C11-3	clypeal setae	M1-2	mandibular setae
Da1, Db1, Dc1	dorsal discal setae	Mnt	mentum
EC1-2	epicranial campaniform sensilla	P1-4	epicranial posterior setae
Em1-2	epicranial marginal setae	Pmnt	prementum
FC1	frontal campaniform sensillum	Pr	prostheca
Fd1-2	frontal discal setae	Sp	spiracle
LC1	lateral campaniform sensillum	T1-4	temporal setae
Lg	ligula	V1-2	ventral setae
L1-3	lateral setae	IIS1-2	antennal solenidia of segment II

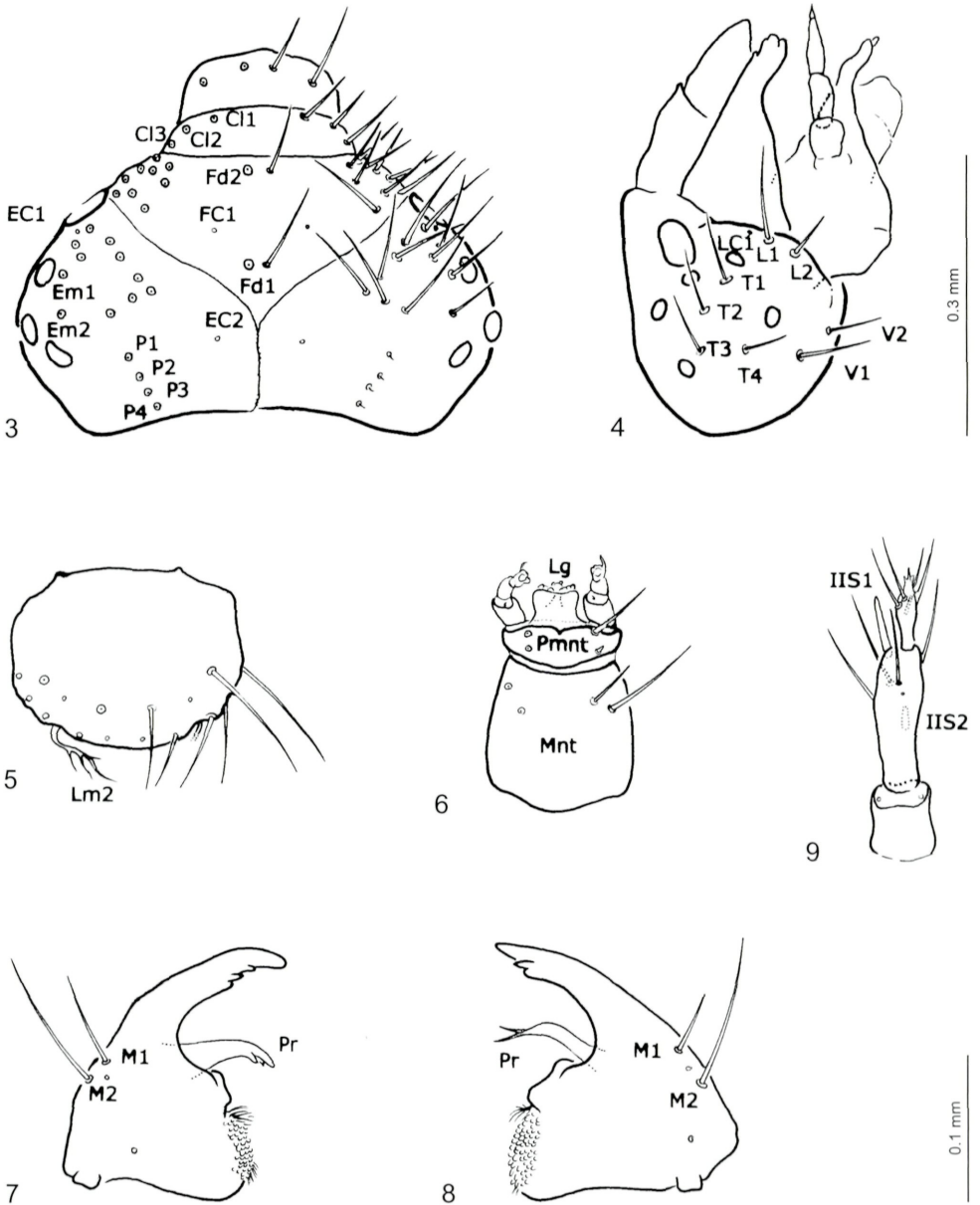
Description of the third instar larva

Habitus as in Figs. 1, 2. Elongate, slender; head and body sclerites well sclerotized. Colour of sclerites evenly pale brown. Total body length about 3.8 mm.

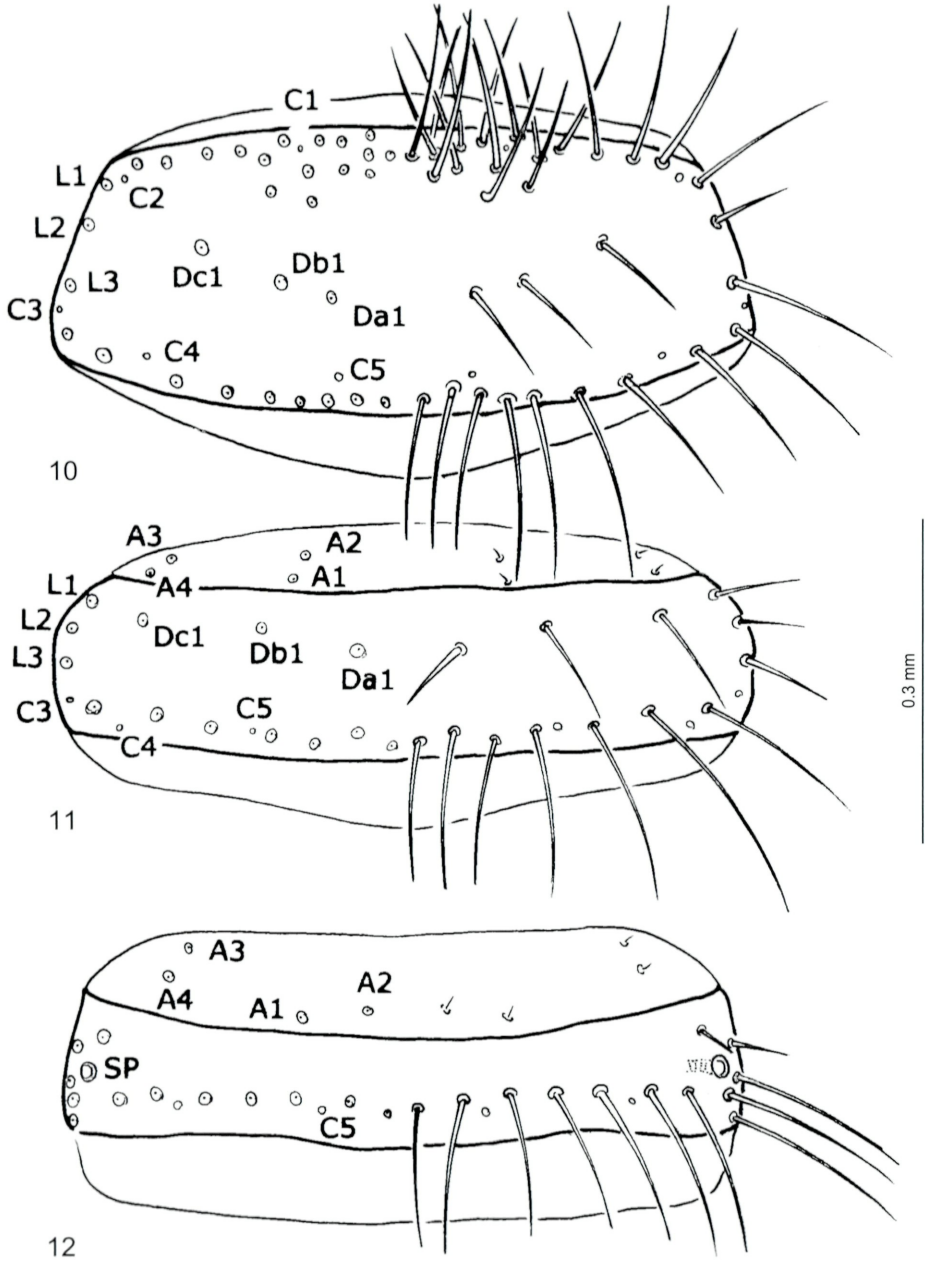
Head capsule width 0.49 ± 0.01 (mean \pm S.D.; $n = 8$); ecdysial suture Y-shaped; five stemmata are present on each ocular area. Chaetotaxy of head capsule as in Figs. 3, 4. Frontal region (Fig. 3) on each side with eleven setae, two frontal dorsal setae (Fd1, Fd2) and nine setae which could be regarded as either frontal lateral setae (Fl) or frontal marginal setae (Fm), due to the difficulty in identifying their homologous setae without studying the first and second instars. Campaniform sensillum FC1 present but not clearly visible in all the specimens. Clypeus (Fig. 3) with three setae on each side (C11–C13). Epicranial regions (Fig. 3) each with two campaniform sensilla (EC1, EC2) and 15 setae: a row of four minute posterior setae (P1–P4), two epicranial marginal setae (Em1, Em2), and nine setae which can be interpreted as either epicranial dorsal setae (Ed) or epicranial lateral setae (El), for the same reasons given above for the frontal region. Temporal regions (Fig. 4), each with four setae (T1–T4). Lateral regions (Fig. 4), each with one campaniform sensillum (LC1) and two setae (L1, L2). Ventral regions (Fig. 4), each with two setae (V1, V2). Labrum (Fig. 5), with the basic chaetotaxic pattern found in other Hydraenidae (e.g. DELGADO & PALMA 1998). Seta Lm2 (Fig. 5) pectinate. Mandibles (Figs. 7, 8) identical in size but slightly different in shape: left mandible (Fig. 7) with a broad prostheca ending in three stout teeth (Pr); right mandible (Fig. 8) with prostheca (Pr) slender and with two pointed apical teeth. Antennae (Fig. 9) long, with segment II about 1.9x as long as segment I, with two distinct solenidia: solenidium IIS1 long and slender; solenidium IIS2 short. Segment III 0.5x as long as II, with the typical four setae and three short apical solenidia found on the antennae of the larvae of other species of *Ochthebius* s.str. Maxillae similar to that of other larvae of *Ochthebius* s.str. Labium (Fig. 6) with ligula globose (Lg) bearing a number of small apical sensilla.



Figs. 1 - 2: Third instar larva of *Ochthebius (s.str.) gonggashanensis*, habitus: 1) dorsal view, 2) lateral view.



Figs. 3 - 9: Third instar larva of *Ochthebius* (s.str.) *gonggashanensis*, head capsule, mouth parts and antenna: 3) dorsal view, 4) lateral view, 5) dorsal view of labrum, 6) ventral view of labium, 7) dorsal view of left mandible, 8) dorsal view of right mandible, 9) dorsal view of right antenna.



Figs. 10 - 12: Third instar larva of *Ochthebius* (s.str.) *gonggashanensis*, chaetotaxy of thorax and abdomen: 10) pronotum, 11) mesonotum, 12) first abdominal tergite.

Pronotum (Fig. 10) with 31 setae and five campaniform sensilla on each side. Setae: three setae in the lateral row L (L1–L3) with L2 shortest; sixteen setae situated on the anterior margin, eight setae situated in the posterior margin and three setae on the discal area. From all these setae only the discal setae Da1, Db1 and Dc1 can be named with a level of confidence. Pronotal campaniform sensilla C1 to C5 distinct. Mesonotum (Fig. 11) with a more reduced chaetotaxy compared to pronotum. Setae: four minute setae in anterior row A (A1–A4); three setae in lateral row L (L1–L3); one in each of the three discal groups (Da1, Db1, Dc1); and seven setae on posterior margin (not named as in Fig. 10).

Abdominal tergites I–VIII as in Fig. 12. Setae and campaniform sensilla as in mesonotum but with reduced numbers: Da1, Db1 and Dc1 absent. Lateral margin with five setae instead of the typical three (L1–L3). Two of these setae are clearly the dorsopleural setae Dp1 and Dp2 found in the dorsopleural sclerite of the first and second instars. The dorsopleural sclerite is fused with the tergite in the third instar larva of all species of Hydraenidae with known larvae. Tergites I–VIII with a distinct spiracle on each side. Urogomphus long, two-segmented and with the same chaetotaxic pattern found in other larvae of *Ochthebius* s.str. Anal vesicle with two hooks.

HABITAT (A. Pütz, pers. comm.): The larvae were found in the sandy margin of a long pool with warm temperate water close the Hailuo-Gou-Glacier stream.

Comparative notes and discussion

The morphology of the third instar larva of *O.* (s.str.) *gonggashanensis* parallels closely that of other species of the subgenus *Ochthebius* s.str. Unusual characters found in the third instar larva of *O.* (s.str.) *gonggashanensis* are the great number of additional setae on the anterior margin of the frontal and epicranial regions of the cephalic capsule, as well as on the anterior margin of the pronotum. In the frontal region of the head, six of the 11 frontal setae are clearly additional to the basic pattern of primary setae found on the head of other hydraenid larvae. These frontal setae should be identified as subprimary setae and not as secondary setae because they are present in the same number and position in all the specimens studied for this description. The same rationale can be applied to interpret the presence of five additional setae on the epicranial region, as well as the 12 additional setae on the anterior margin of the pronotum.

As noted in the introduction, the larval chaetotaxy of only two other species of *Ochthebius* s.str. has been described in enough detail to allow comparison with *O.* (s.str.) *gonggashanensis*. The third instar larva of *O.* (s.str.) *gonggashanensis* differs from that of *O.* (s.str.) *auropallens* in the shape of the prosthecae, the rounded labrum, the grouping of primary and subprimary setae on the anterior margins of the frontal and epicranial regions of the cephalic capsule, and in the setae on the anterior margin of the pronotum (compare Figs. 3, 5, 7 with DELGADO & SOLER 1997: Figs. 3, 9, 18). The third instar larva of *O.* (s.str.) *danzo* differs from that of *O.* (s.str.) *gonggashanensis* in having no subprimary setae (see DELGADO & MATSUI 2000: Fig. 12).

Acknowledgements

I am grateful to Manfred A. Jäch (Naturhistorisches Museum Wien, Austria) for the loan of this valuable material and Andreas Pütz for providing information on the habitat of the larvae. I am indebted to Ricardo Palma (Museum of New Zealand Te Papa Tongarewa, Wellington, New Zealand) for his critical review of an early version of this manuscript.

References

- DELGADO, J.A. & MATSUI, E. 2000: Description of the larval stages of *Ochthebius* (s.str.) *danjo* Nakane (Coleoptera, Hydraenidae) from Japan. - Entomological Science 3 (1): 125-130.
- DELGADO, J.A. & SOLER, A.G. 1997: Morphology and chaetotaxy of larval Hydraenidae (Coleoptera) II: The subgenus *Ochthebius* s.str. Leach. - Bulletin de l'Institut Royal des Sciences Naturelles de Belgique (Entomologie) 67: 45-55.
- DELGADO, J.A. & PALMA, R.L. 1998: Larval stages of three *Meropathus* species (Coleoptera: Hydraenidae: Ochthebiinae) from New Zealand. - New Zealand Journal of Zoology 25: 409-419.
- JÄCH, M.A. 2003: Hydraenidae: II. Synopsis of *Ochthebius* Leach from Mainland China, with descriptions of 23 new species (Coleoptera), pp. 313-369. - In Jäch, M.A. & Ji, L. (eds.): Water Beetles of China, Vol. III. - Wien: Zoologisch-Botanische Gesellschaft in Österreich and Wiener Coleopterologenverein, VI + 572 pp.
- PALMA, R.L. 1978: Slide-mounting of lice: a detailed description of the Canada balsam technique. - New Zealand entomologist 6 (4): 432-436.

Dr Juan A. DELGADO

Departamento de Zoología y Antropología Física, Facultad de Biología, Universidad de Murcia, E - 30100 Murcia, Spain (jdelgado@um.es)

ZOBODAT - www.zobodat.at

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Water Beetles of China](#)

Jahr/Year: 2003

Band/Volume: [3](#)

Autor(en)/Author(s): Delgado Juan A.

Artikel/Article: [Hydraenidae:III. Description of the third instar larva of Ochthebius \(s.str.\) gonggashanensis Jäch \(Coleoptera\) 371-377](#)