# Description of the egg-case and larva of Limnoxenus niger (Zschach) (Coleoptera, Hydrophilidae)

by

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ABSTRACT

The egg-case and larva of *Limnoxenus niger* (Zschach) are described and compared with those of the related *Hydrobius fuscipes* (L.). A larva attributed to *Limnoxenus niger* by Böving & Henriksen (1938), is shown to belong to *Hydrobius fuscipes* (L.)

In a paper on the larvae of Danish Hydrophilidae by Böving & Henriksen (1938), the larva of *Limnoxenus niger* (Zschach) was described. The description was based on one specimen from a mixed lot of larvae kept in the collection of the Zoological Museum, Copenhagen. The specimen was compared with a long series of *Hydrobius fuscipes* (L.) larvae. In order to verify the larval characters of *Limnoxenus niger* for comparison with those of *Hydrobius fuscipes*, larvae of both species were reared in the spring of 1973.

## *Limnoxenus niger* (Zschach)
(figs. 1—2, 4—9, 11)

### Egg-case (fig. 11)

Description. — Spun with white silk, attached to *Vallisneria* leaf; total length 70 mm. Part containing eggs approximately oval, length 12 mm, height 8 mm, width 10 mm; superior surface flat, margin slightly raised. From the top of the part containing eggs arises a 60 mm long and 2 mm wide ribbon consisting of spongy air-filled tissue, which reaches to 20 mm above the water surface.

Identification. — Easily distinguishable from the egg-case of *Hydrobius fuscipes* (fig. 10) by the longer ribbon (60 mm versus 20 mm).

Material examined. — One egg-case spun by a female specimen captured 28.5.1973 at Schipluiden, province of Zuid-Holland, the Netherlands; not preserved.

### Larva (figs. 1—2, 4—9)

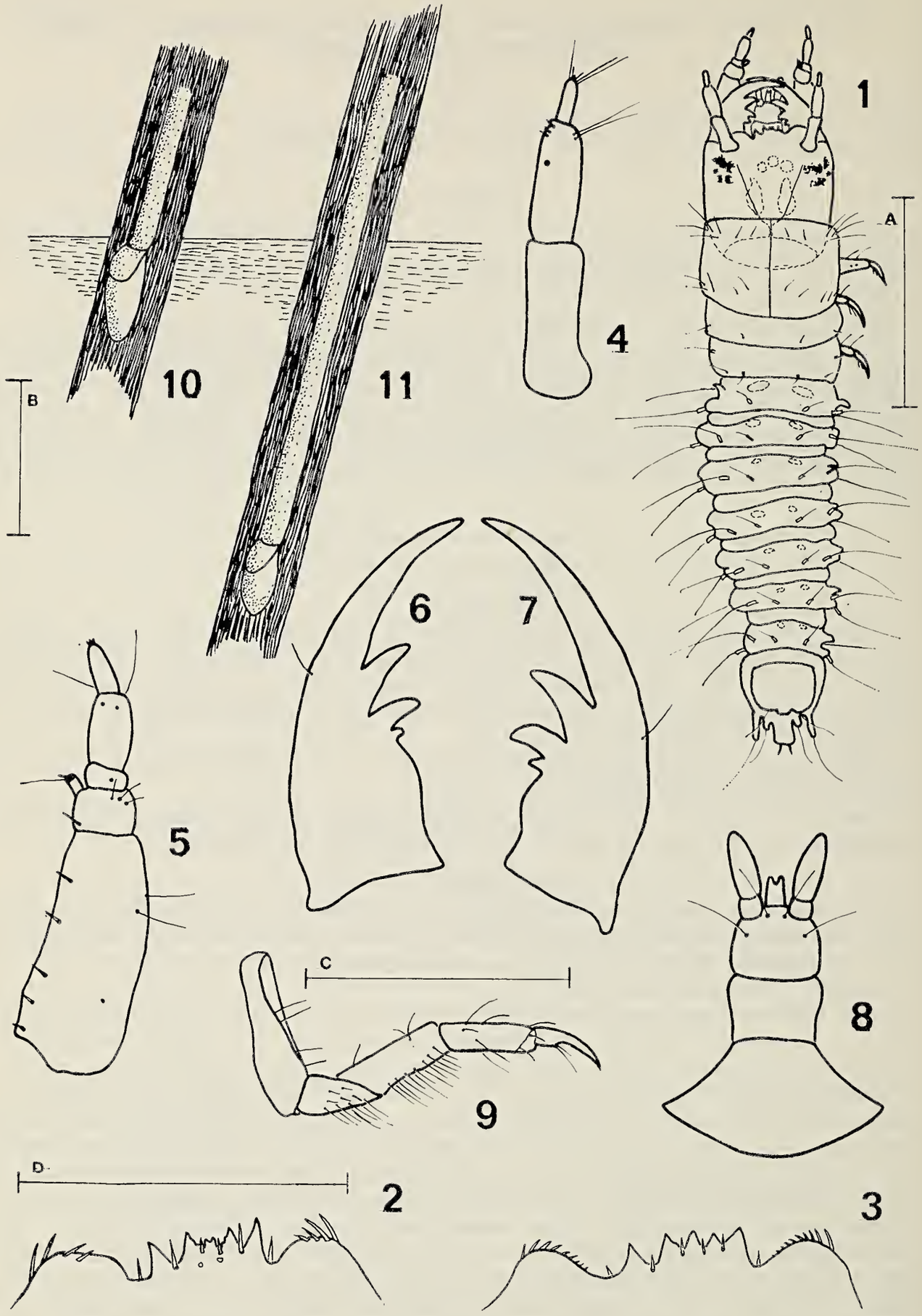
Description. — Dorsal parts brownish white; ventral parts whitish. Dorsal part of head with slightly infuscated patches (fig. 1). Segments 4 and 5 of maxilla and segment 2 of labial palpus more sclerotized than other segments, brownish (specimen preserved in alcohol, subsequently in Berlese).

Body length 3.2 mm; maximum width 0.8 mm; body widest at 1st thoracic segment, gradually narrowing caudad. Head capsule subquadratical in outline (l/w ratio 0.8), dorsoventrally flattened; sides slightly convex in dorsal outline, narrowing posteriorly.

Anterior border of frontoclypeus (fig. 2) truncate, asymmetrical, the right side projecting slightly farther than the left; median part armed with five teeth; paramedian and lateral teeth sharply pointed. Point of median tooth seemingly broken off, forming two denticules closely placed together, separated by a small incurvation. Left lateral tooth isolated from the others; incurvation between left lateral tooth and left paramedian tooth deeper than the others. Incurvations each with a stiff acuminate spine not projecting beyond the tip of the adjacent teeth, additional spine present outside lateral teeth. Anterolateral lobes asymmetrical, their front margin armed with four short spines. Ocelli arranged in two oblique rows of three ocelli each, five of the ocelli well-developed, the lateral one of the posterior row small. Epicranial sutures distinct, confluent near posterior cephalic margin; coronal suture short.

Antenna (fig. 4) not projecting beyond segment 3 of maxilla. Antennal segments 1 and 2 approximately equal in length; segment 3 approximately one-third of the length of segment 2 and more slender.

Mandibles (figs. 6—7) subsymmetrical, each with a taper-pointed curved distal part and three innermost teeth, the proximal one being the smallest.




Figs. 1—2, 4—9, 11, *Limnoxenus niger*. 3, 10, *Hydrobius fuscipes*. Fig. 1, habitus, dorsal view. Figs. 2—3, anterior border of frontoclypeus, dorsal view. 4, left antenna, dorsal view. 5, right maxilla, dorsal view. 6—7, mandibles, dorsal view. 8, labium, ventral view. 9, right median leg. 10—11, egg cases. Figs. 2—8, same scale. Scale-line A = 1 mm, to fig. 1. Scale-line B = 20 mm, to 10—11. Scale-line C = 0.5 mm, to 9. Scale-line D = 0.4 mm, to 2—8.

Maxilla (fig. 5) longer than any other cephalic appendage. Stipes (segment 1) longer than palpiger (segment 2) and palpus (segments 3, 4 and 5) combined. Inner side of maxillary segment 1 with a row of five spines, outer side with two long setae placed at one-third of its length from the distal end. Segment 2 as long as wide. Galea approximately equal in length to segment 3. Maxillary segment 3 approximately twice as wide as long. Segment 4 twice as long as segment 2. Segment 5 approximately two-thirds of the length of segment 4 and more slender.

Labium (fig. 8): sutures of submentum distinct. Mentum subquadratical, superior surface densely covered with short spines. Prementum subquadratical, slightly narrower than mentum. Segment 1 of labial palpus as long as wide. Segment 2 approximately four times as long as segment 1. Ligula approximately twice as long as segment 1 of labial palpus, apex excised.

Shape of thoracic tergite 1 slightly arcuate; discal surface flat. Anterior border straight; lateral border straight; posterior border arcuate. Sagittal suture distinct. Anterolateral angle approximately 90°, rounded off; posterolateral angle obtuse, rounded off. Anterolateral side of disc with four long setae; posterolateral side with three long setae. Thoracic tergites 2 and 3 each approximately three times as wide as long.

Abdominal segments 1—7 with distinct transverse dorsal and ventral folds. Abdominal tergites 1—7 each with a pair of sclerites placed anteromedially, on anterior segments oval in outline, on posterior segments reduced and acquiring a more circular outline. Each tergite (except 8) bears slightly distally from the sagittal line a posteromedian callosity provided with a short papilla and a short seta. A similar callosity with a longer papilla and a longer seta is found on the posteroepipleural side just posterior to the conically raised lateromedian spiracle. Epipleural area with two swellings, arranged one above the other, the dorsal one smaller than the ventral one and situated more posteriorly. On top of both swellings a long papilla provided with a long seta. Hypopleural area swollen, lacking papillae. Intersegmental membrane well-developed, swollen laterally. Abdominal segments and intersegmental membranes densely covered with very short dark setae.

Abdominal tergite 8 subquadratical, posterior border with three small lobes. Procerci moderately long, not exceeding abdominal sternite 9. Posterior border of abdominal sternite 9 rounded, its margin slightly bent upwards, medially with two short stiff setae.

Legs (fig. 9) medium-sized, tibiae and tarsi visible from above. Tarsal claws weakly curved, approximately two-thirds of the length of corresponding tibia, their inferior base with two setae. Tibiae approximately twice as long as wide, their surface sparsely setiferous. Femora and corresponding tibia subequal in length. Proximal end of femora oblique, their inferior side remotely setiferous. Trochanteres distinct, half as long as corresponding femur, their inferior side remotely setiferous. Superior side of coxae with a groove for reception of corresponding femur.

Identification. — The larva of *Limnoxenus niger* is quite similar to that of *Hydrobius fuscipes*. It can be distinguished by the seemingly broken median frontoclypeal tooth, forming two denticules (compare figs. 2 and 3).

Material examined. — Three larvae reared from a collection of 2 ♂♂, 1 ♀, captured 28.5.1973 at Schipluiden, province of Zuid-Holland, the Netherlands. Deposited in the Rijksmuseum van Natuurlijke Historie, Leiden.

Discussion. — The larva described by Böving and Henriksen (1938) is certainly not *Limnoxenus niger* because the median tooth of the frontoclypeus is equally shaped as the other teeth. The supposed identity of this larva was based on the following character: left lateral frontoclypeal tooth not isolated from the others. I attribute their larva to *Hydrobius fuscipes*, which may show some variation. According to various authors (e.g. F. Balfour-Browne, 1958) *Limnoxenus* Motschulsky is a synonym of *Hydrobius* Leach, while others (e.g. Lohse, 1971) maintain *Limnoxenus* as a separate genus. Their considerations are mainly based on characters of the adult. For the time being it seems advisable to leave both species in separate genera until more data become available, especially concerning the characters of the egg-case and larva of other species.

## REFERENCES

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PEST CONTROL IN GROUNDNUTS. Pans Manual No. 2. Third Edition. Edited by Susan D. Feakin, 1973. Pp. 197; 90 zwart wit afbeeldingen. Centre for Overseas Pest Research. Foreign and Commonwealth Office Overseas Development Administration London. Prijs £ 0.50. Free of charge to government and educational establishments and research institutes in countries eligible for British aid.

In deze geheel herziene uitgave van het bekende handboekje voor de herkenning en bestrijding van ziekten en plagen in de grondnoot worden achtereenvolgens de onkruiden, ziekten, nematoden, insekten en mijten, voorraadinsekten en het aflatoxine probleem besproken. De toepassing van herbiciden wordt in twee overzichtelijke tabellen duidelijk gemaakt. Van de verschillende ziekten en plagen wordt de verspreiding aangegeven en zijn schadebeelden en plagen beschreven. Kaartjes, tekeningen en foto's verduidelijken de tekst. Veel biologische gegevens worden vermeld. Waar mogelijk worden cultuurmaatregelen voor de bestrijding of het voorkomen van ziekten en plagen besproken. De verschillende mogelijkheden van chemische bestrijding van plagen is in veel gevallen weergegeven in duidelijke tabellen. Na elk onderwerp volgt een korte literatuurlijst. Het doel van het boekje is landbouwvoorlichters op de hoogte te brengen van de laatste ontwikkelingen op het gebied van „pest control". Door zijn grote duidelijkheid is het boekje echter ook zeer bruikbaar voor niet-landbouwkundig geschoolden en is m.i. onmisbaar voor iedereen die te maken heeft met de cultuur van grondnoten. — G. G. M. Schulten.

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EXPERIMENTAL ANALYSIS OF INSECT BEHAVIOUR. L. B. Browne editor. VIII, 366 p, 151 figs., auteurs index 18 kolommen, index op insekten (en andere dieren) 5 kolommen, subject index 11 kolommen. Springer Verlag, Berlin—Heidelberg—New York. ISBN 3-540-06557-1. Prijs (gebonden) DM 39.80 (US $ 15.40).

De 25 artikelen die onder bovengenoemde titel zijn gebundeld, hebben alle hun ontstaan te danken aan het veertiende entomologisch congres te Canberra, al zijn ze niet alle een rechtstreeks uittreksel uit de congres-verhandelingen. De editor, verbonden aan het CSIRO, div. Entomology te Canberra City, meldt in zijn inleiding dat hij artikelen met een relatief weidse of zelfs speculatieve strekking prefereerde, en het resultaat is daar in het algemeen wel naar, heel duidelijk bijvoorbeeld in een artikel van H. Dingle, "The experimental analysis of migration and life-history strategies in insects".

Ondanks het zeer gespecialiseerde onderwerp biedt het boek een verrassende veelheid aan onderwerpen — om een paar grepen te doen: bouw en functie van insektehersenen, gewenning bij de schrikreactie — een niet erg speculatieve bijdrage —, rhythmische activiteiten van het zenuwstelsel, de achtergronden van monofagie bij een aantal *Leptinotarsa*-soorten, etc.

Het boek is van een aantal zeer uitvoerige en verzorgde indexen voorzien, iets waar het bij symposia nogal eens aan ontbreekt. Een deel van de illustraties is vrij slecht. — W. N. Ellis.