

Leptestheria dahalacensis (RÜPPEL, 1837), a Conchostracan new for the Belgian fauna

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Abstract

The freshwater conchostracan *Leptestheria dahalacensis* (Rüppel, 1837) (Crustacea, Branchiopoda) is recorded from Belgium for the first time. The species was collected from an artificially temporary fishpond, about 30 km E of the city of Brussels. Some characteristics of the locality are described; a brief diagnosis and an account of the present day distribution of this species are presented.

Key-words : Conchostraca, *Leptestheria dahalacensis*, taxonomy, ecology, distribution.

Résumé

Le conchostracé d'eau douce *Leptestheria dahalacensis* est observé en Belgique pour la première fois. L'espèce a été récoltée dans un étang temporaire artificiel, à environ 30 km à l'Est de Bruxelles. Certaines caractéristiques du milieu sont décrites. Une brève diagnose et un rappel de la distribution actuelle sont présentés.

Mots-clés : Conchostraca, *Leptestheria dahalacensis*, taxonomie, écologie, distribution.

Introduction

Conchostracans are relatively large (5-15 mm), phyllopodous crustaceans, generally occurring in predator-poor, temporary freshwater habitats. Their body is completely enveloped by a bivalved carapace. They are most abundant in tropical and subtropical areas. A number of species also occurs in temperate regions, but they are never common there.

BRENDONCK (1989) presents a review of the 'Phyllo-poda' pertaining to the Belgian fauna. *L. dahalacensis* has never been recorded from Belgium before, and the present paper furthermore constitutes the first published record of a conchostracan in Belgium. No phyllopod had moreover been collected from Belgian inland waters since 1959.

Taxonomical notes

Family Leptestheriidae DADAY, 1923

DIAGNOSIS : Rostrum (in adults) armed with a distinct apical spine in both sexes (Figs. 1A, E, F), foremost spine on upper margin of telson not larger than the others (Fig. 1A), all legs with a triangular epipodal

lamina (Fig. 1I), entire valve surface marked with a considerable number of growth lines (Fig. 1B).

Genus *Leptestheria* SARS, 1898

DIAGNOSIS : Dorsal lobe of exopod cylindrical on at least 2 of the 10-15th pairs of legs in the female (Fig. 1I). Margins of exopods of legs straight, without digitate setiferous processes (Fig. 1I) (DADAY, 1923).

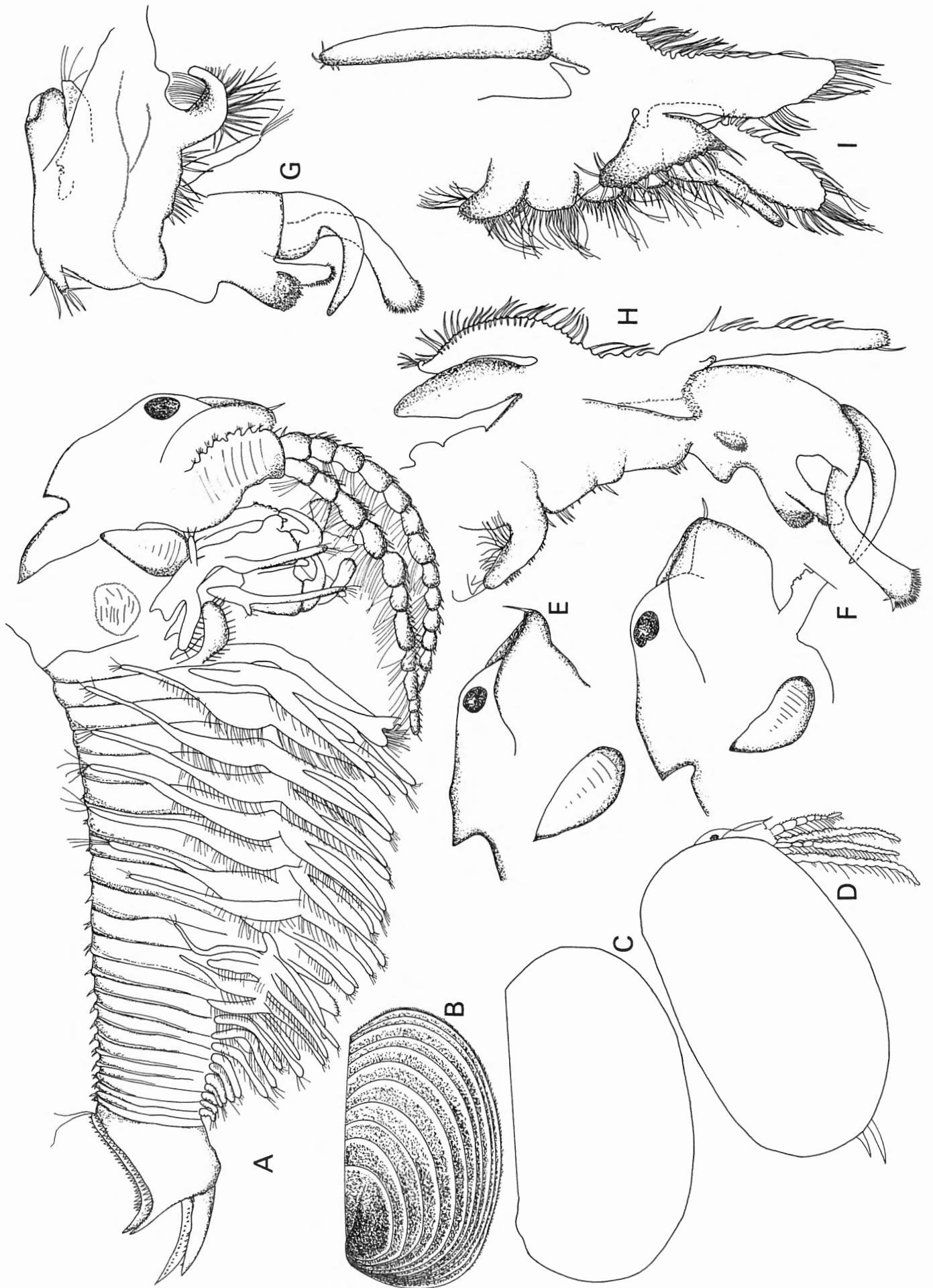
REMARK : The latter feature distinguishes *Leptestheria* from the genus *Leptestheriella* DADAY, 1913 (occurring in Asia and sub-tropical Africa). However, it was found to be quite variable in the different limbs of the present specimens. The validity of this character, and consequently of the junior genus *Leptestheriella* needs to be re-evaluated.

Leptestheria dahalacensis (RÜPPEL, 1837)

SYNONYMIES : STRASKRABA (1966) has synonymised a large number of European, Asian and North-African *Leptestheria* species with *L. dahalacensis*. This list of synonymies is not cited here, but the views of STRASKRABA (loc. cit.) are accepted in the present contribution.

DIAGNOSIS : Occipital angle prominent in both sexes (Figs. 1A, E, F). Terminal body segments dorsally without hooks or with very short hooks only, the latter then set with spines shorter than the hooks themselves (Fig. 1A) (STRASKRABA, 1966). Length c. 8 mm.

SEXUAL DIMORPHISM : First two pairs of thoracopods in the male modified to clasping organs (Figs. 1G, H - used during copulation). Female with 5-6, exceptionally 4, thoracopods (the first one being the 10th pair) showing a cylindrical dorsal part of the exopodite, adapted to carry eggs (Fig. 1I). Number of spines on telson generally lower in the male. Shape of rostrum also different in both sexes : rounded, spatuliform in the male, pointed in the female (Figs. 1E, F). Dorsal margin of male shell straight or with a slight elevation in the centre only (Fig. 1C), in female shells, dorsum slightly, but regularly curved (Fig. 1D).



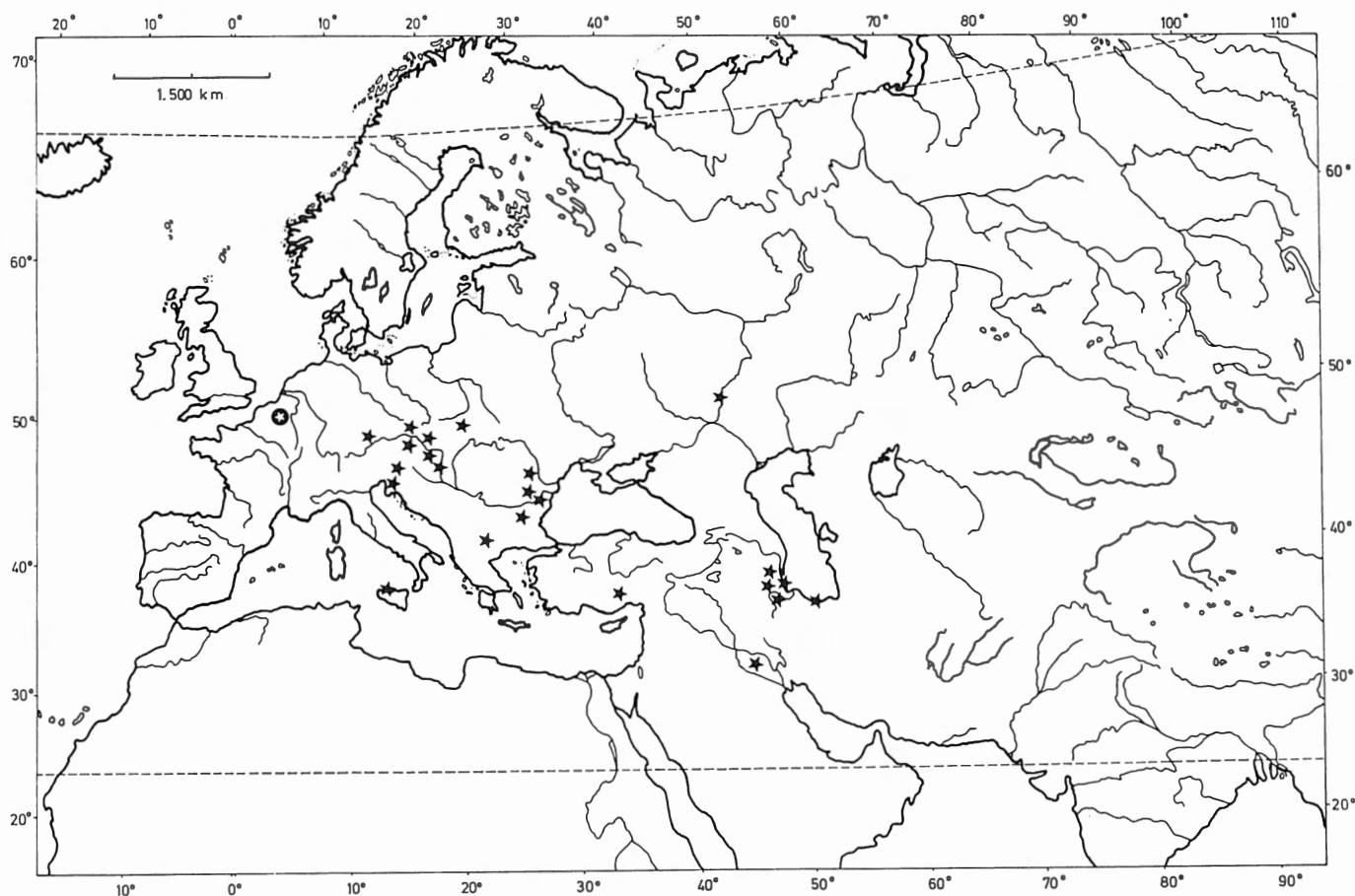


Figure 2. Geographical distribution of *Leptestheria dahalacensis* (RUPPEL) in Europe (★ = localities from the literature, Star in circle = new Belgian locality).

Notes on ecology

GENERAL ASPECTS OF ECOLOGY : *Leptestheria dahalacensis* generally occurs in temporary ponds beside roads, in field meadows and in floodpains (FLÖSSNER, 1972). All *Leptestheria* species appear to sustain considerable variations in environmental conditions and *L. dahalacensis* is no exception (BOTNARIUC, 1947). Adults are mainly benthic and burrow in the surface of the substrate, where they lie filtering with their ventral side up. Propagation is bisexual ; fertilized eggs are brooded inside the female carapace and are shed with every moult.

DESCRIPTION OF THE BELGIAN LOCALITY : The species was collected from a fishpond, some 30 km E of Brussels (U.T.M. : FS.23). This freshwater body, with a surface area of c. 100 x 100 m and a maximum depth of

c. 1-1.5 m, is kept artificially temporary, as it is drained between April and August each year. When the basin is filled, only small fish, unable to predate on the large conchostracans, are grown here. The bottom is muddy and limited stands of macrophytes are present in the shallow littoral zone, while filamentous algae occur in some of the deeper parts.

Physical and chemical variables of the pond water at the time of collecting : surface temperature = 4.5°C, temperature at the bottom (c. 1 m) = 4.6°C, dissolved oxygen = 9.5 mg/l or 72% saturation.

Accompanying fauna : of interest was the occurrence of the Oligochaete *Branchiura sowerbyi* and the ostracod *Heterocypris incongruens*.

MATERIAL : The locality was visited on 26.10.1988 and on 8.11.1988. Most animals were collected on the latter date, when a strikingly aberrant sex-ratio was recorded: 26 males compared to only 6 females were caught. Some of the females were still ovigerous. Densities were low, probably not more than a few individuals per square meter.

SPANDL (1925) also noted a disproportionate sex ratio for *L. dahalacensis* in warmer regions, where males were found to represent up to 75% of the natural population. Also BRAUER (1872) has reported abundance of males for this species. Disproportionate sex ratios, or successional variation in the ratios are quite common among bisexual conchostracans and are often

Figure 1. *Leptestheria dahalacensis* (RÜPPEL)
 A. Habitus of adult male, with valves removed. B. Male, lateral view of left valve. C. Male, lateral outline of left valve. D. Female, lateral outline of right valve. E. Female, lateral view of head. F. Male, lateral view of head. G. Male, first thoracopod (first clasper). H. Male, second thoracopod (second clasper). I. Female, 10th thoracopod.

characteristic of older populations (KARANDE & INAMDAR 1961, STRENGTH 1977).

Distribution

The study of STRASKRABA (1965A, B, 1966) on the variability in Czechoslovakian conchostracans revealed that most of the features used by DADAY (1913, 1923) and others to characterise species are subject to considerable variation, not only between populations, but also between specimens in one and the same deme and even in the same individual (e.g. right compared to left appendages). Consequently, many species were considered invalid and the genera *Limnadia*, *Cyzicus*, *Leptestheria* and *Eoleptestheria* have only one European representative to date. According to this species-concept, *L. dahalacensis* has a wide distribution, ranging from Eastern Asia to the southern part of Central Europe and North Africa. The palaeartic conchostracans (*L. dahalacensis*, *Eoleptestheria ticinensis* and *Cyzicus tetracerus*) are indeed confined to the southern part of Europe, their most northern limits being the southern shores of the Baltic Sea (*C.*

tetracerus) or the Carpathian isthmus (*Leptestheria* and *Eoleptestheria* - Fig. 2). To the West they mostly do not occur beyond the line Italy-Bavaria-Berlin, this being the border commonly reached by species considered as postglacial migrants from the East or the South-East. It furthermore appears that the Danube lowland played an important role in this postglacial migration (BOTNARIUC 1948, STRASKRABA 1966).

The Belgian locality, however, should probably not be considered a natural range extension, because *L. dahalacensis* was most likely introduced in 1984, when carp (*Cyprinus carpio*), originating from a place near Lake Balaton (Hungary) was brought there. Since then, however, the species obviously adapted to this artificial environment and established a viable population. *L. dahalacensis* can therefore safely be considered a new element of the Belgian fauna.

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