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Archisotoma vareli sp. nov., a new species from Germany (Collembola, Insecta)

MARIA STERZYŃSKA¹ & RAINER EHRNSBERGER²

¹Museum and Institute of Zoology PAS

²University of Vechta

Zusammenfassung

Archisotoma vareli sp. nov., eine neue Art aus Deutschland (Collembola, Isotomidae).

Während unserer synökologischen Untersuchungen im Litoral im Deichvorland bei der Vareler Schleuse an der Nordsee südöstlich von Wilhelmshaven (EHRNSBERGER et al. 1997) haben wir eine neue Springschwanz-Art entdeckt, die zur Gattung *Archisotoma* Linnaniemi, 1912 gehört. Viele terrestrische Kleinarthropoden wie Milben und Springschwänze haben sich gut an die Gezeitenzone angepaßt (SCHUSTER 1979) und scheinen fest an diesen Lebensraum gebunden zu sein. Die neue Art *Archisotoma vareli* sp. nov. besiedelt Salzwiesen und Bereiche des Schlickwatts und kommt hauptsächlich in der Nähe von *Salicornia* sp. vor.

Abstract

A new species of *Archisotoma* from German littoral habitats of the North Sea (Wilhelmshaven) is described. Notes on distribution and ecology are given.

Introduction

A new species from the genus *Archisotoma* Linnaniemi, 1912 was found during a synecological investigation at littoral habitats of the North Sea at Wilhelmshaven/Germany (EHRNSBERGER et al. 1997).

Archisotoma vareli sp. nov.

Diagnosis. This new species of *Archisotoma* Linnaniemi, 1912 possesses elliptical PAO, two distinct but different length teeth of capitulum of maxilla and ciliated lamellae, 8 prelabral setae, presence of 3+3 trichobothria on the dorsal side of Abd. VI and 1+1 trichobothrium on ventral side of Abd. VI.

Description

Size 1.8 mm long (adults) (Fig. 1). Colour white with light grey spots, ocelli dark, primary granulation coarse.

Antennae. Proportion of the antennal segments I: II: III: IV = 1 : 1.3 : 1.3 : 1.5. Antennal segment I and II with 20-35 and 51-60 setae, respectively. Ant. organ III with two sensilla and one microsensillum. Ant. IV with 7 cylindrical sensilla distinctly differing from regular setae, one microsensillum and an organite subapicale.

Head: 8+8 eyes with H and G only with difficulty to be distinguished from the integument. PAO elliptical, about 2.5 times higher than broad; 1.8 times longer than diameter of the nearest ocellus (Fig. 2). Head with 8 - 9 prelabral setae between base of the antennae and base of the labrum. 5+5 setae along ventral line. Capitulum of maxilla with two teeth; the external teeth longer than internal, ventral lamella slightly ciliated along the edge. The external ventral lamella with several fringes practically equal to teeth of maxilla. The internal dorsal lamella is hood-shaped with fringed edges, ciliated at the base. The internal proximal lamella is fan-shaped with long fringes. The internal median lamella is shaped like a long, plain tongue, slightly ciliated (Fig. 3).

Chaetotaxy with short setae. Sensilla of thorax and abdomen present but hardly to be distinguished from main covering of hairs (Fig. 4). Sensillar formula: 21/100/121. Abd. V and VI with distinctly developed macrochaetae. Dorso-lateral side of Abd. VI with 3+3 trichobothria; ventro-lateral side of Abd. VI with 1+1 trichobothria (Fig. 5).

Ventral tube with 8+8 setae. Thoracic sternites with 0+0, 0+0, 2-5+2-5 setae. Tenaculum with 4 teeth. Manubrium without ventral setae and with 35 - 45 short dorsal setae. Dens with 36 - 39 ventral setae and 40 - 44 dorsal setae. Mucro tridentate with basal setae (Fig. 6). Tibiotarsus I, II, III with 22 - 27; 35 - 39; 35 - 39 setae, respectively. Claws without inner teeth, empodium $\frac{3}{4}$ as long as inner edge of claw. Tibiotarsus III without thickened apical spur-hair (Fig. 6).

Type material

Holotype: Female (slide), from Germany: Varel, 7 Dec. 1996. Flooded mud with *Salicornietum strictae* Christiansen et Tx. 1927, small pioneer zone submerged by the tide and with high salinity (37.7 ‰). Deposited at the Museum and Institute of Zoology, Polish Academy of Sciences, Warsaw/Poland.

Type locality: Varel near Wilhelmshaven, North Sea, Lower Saxony, Germany.

Paratypes: Deposited at the Museum and Institute of Zoology Polish Academy of Sciences Warsaw/Poland and at the State Museum of Natural History Görlitz/Germany.

Discussion

The structure of maxillae was commonly used for separating species of the genus *Archisotoma* Linnaniemi, 1912 (GISIN 1960, DELAMARE DEBOUTTEVILLE 1953, 1956, DA GAMA 1968, POINSOT 1965, YOSII 1971, FJELLBERG & POINSOT 1975). Currently, other specific characters for the external morphology as e.g., chaetotaxy, are applied (FJELLBERG & POINSOT 1975, FJELLBERG 1980 a, b, THIBAUD & WEINER 1997).

Using the structure of maxilla, *A. vareli* sp. nov. belongs to the group of *A. pulchella*, *A. pauliani*, *A. brucei*, *A. subbrucei*, *A. polaris* with bidentate capitulum of maxilla and equal length of lamellae and capitulum of maxillae. The capitulum of maxillae of *A. vareli* with two nonidentical teeth is similar to those in *A. pulchella*, but in contrary to *A. pulchella* the new species has all lamellae ciliated along the edge.

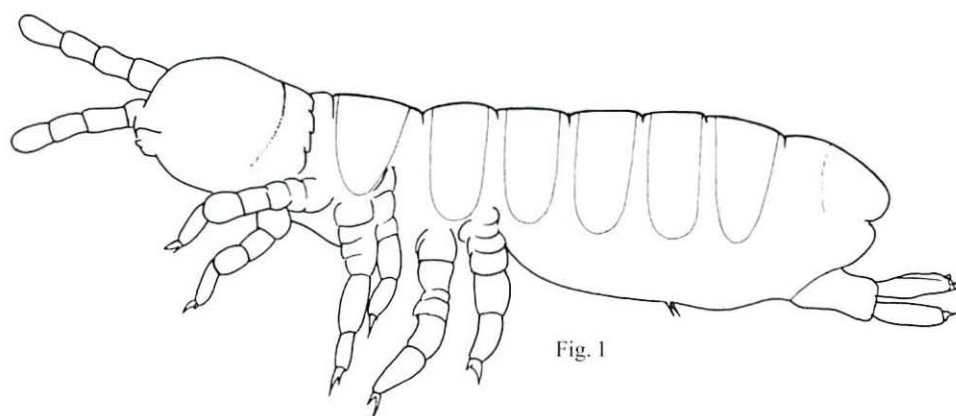


Fig. 1

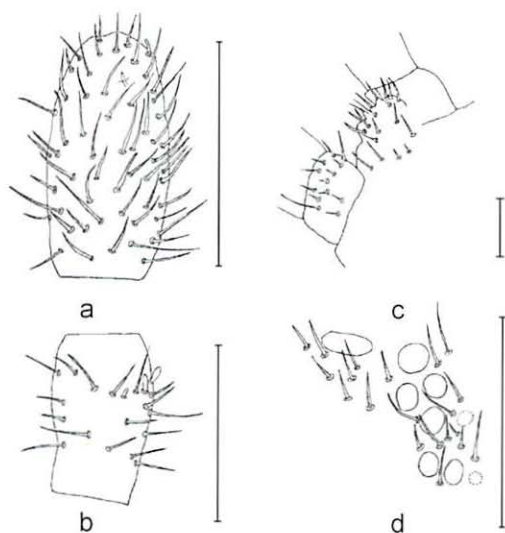


Fig. 2

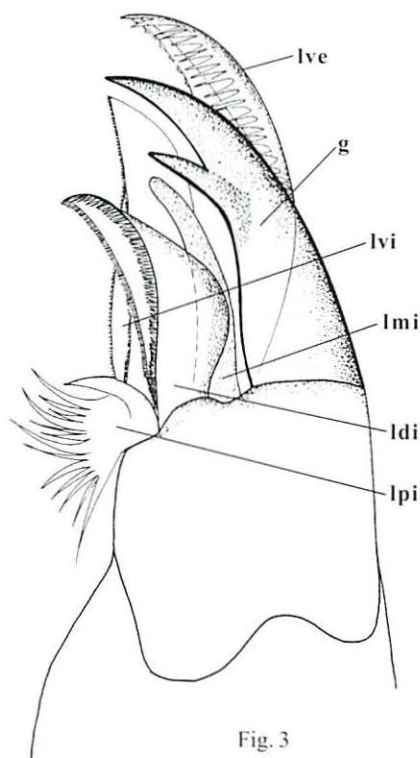


Fig. 3

Fig. 1 *Archisotoma vareli* sp. nov. female, lateral view

Fig. 2 *Archisotoma vareli* sp. nov.: **a** dorsal side of Ant. IV; **b** ventral side of Ant. III; **c** face with prelabral setae; **d** PAO and eyes; Scale 10 mm

Fig. 3 Maxilla of *Archisotoma vareli* sp. nov. **g** teeth, **ldi** internal dorsal lamella, **lmi** internal median lamella, **lpi** the internal proximal lamella, **lve** external ventral lamella, **lvi** ventral lamella

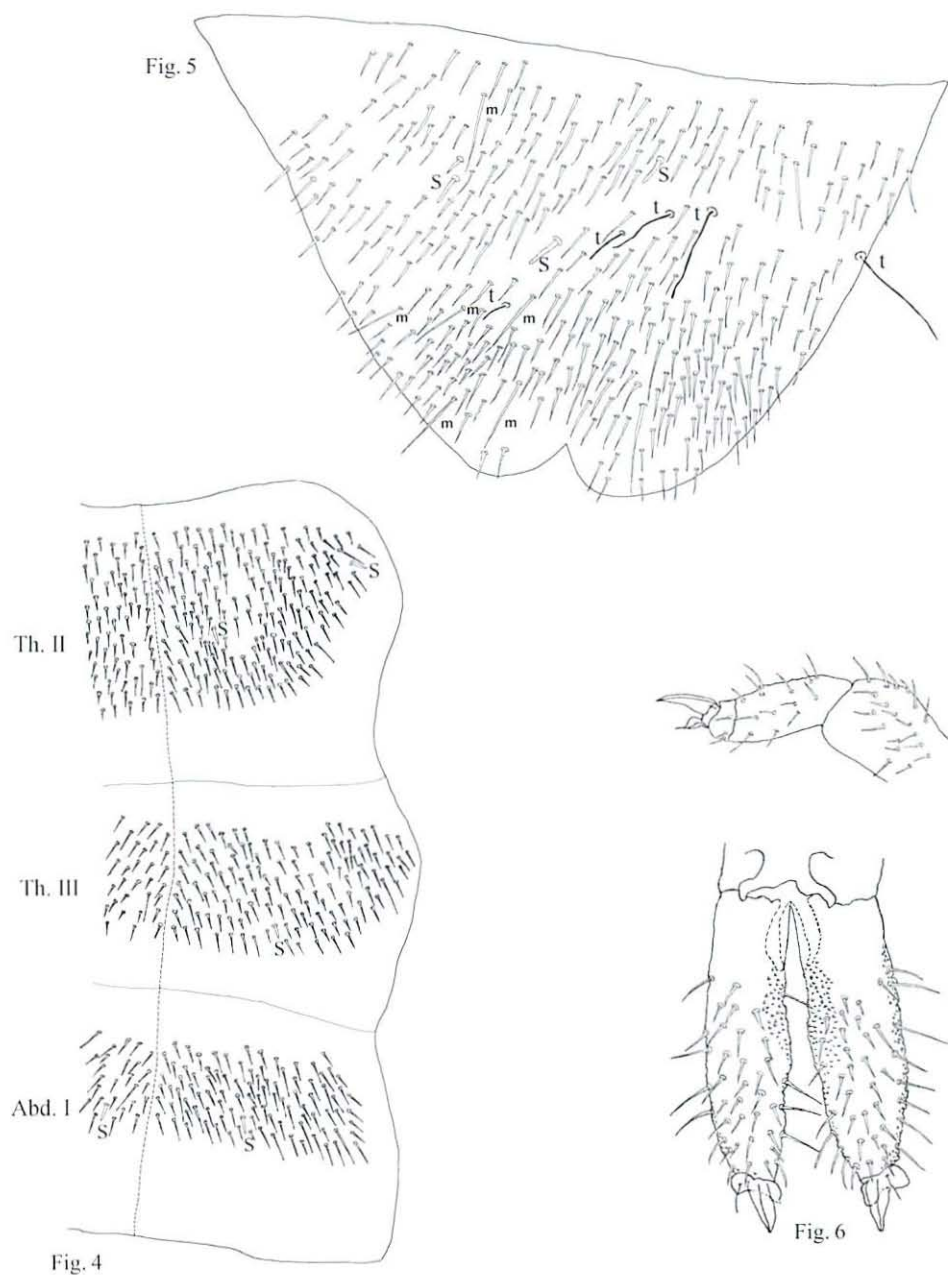


Fig. 4 *Archisotoma vareli* sp. nov. Dorso-lateral chaetotaxy of Th. II – III and Abd. I. s sensorial seta

Fig. 5 *Archisotoma vareli* sp. nov. Dorso-lateral chaetotaxy of Abd. V – VI. s sensorial seta, t trichobothrium, m macrochaetae

Fig. 6 *Archisotoma vareli* sp. nov. Lateral side of tibiotarsus I, ventral side of dens and mucro

Concerning the external morphology, *A. vareli* sp. nov. is very close to *A. polaris*. The sensorial setae of thorax and abdomen are small and hardly differ from the main covering of the setae; $\frac{1}{3}$ of basal part of ventral side of dens is less hairy, the ventral side of head is with 5 setae. *A. vareli* sp. nov. distinctly differs from *A. polaris* by presence of 8 - 9 prelabral setae between base of labrum and bases of antennae (*A. polaris* 6 - 7 setae); shorter PAO and larger eyes PAO (PAO/ocellus = 1.8 of *A. vareli*, of *A. polaris* it is 2.9) and presence of 3+3 trichobothria on dorso-lateral side of Abd. VI and 1+1 trichobothrium on ventro-lateral side of Abd. VI.

Derivation of name. Named after the places where this species was found for the first time.

Distribution and ecology. This new species is distributed in the salt marshes of the North Sea. The most abundant population inhabits the pioneer zone where the plant association *Salicornietum strictae* normally develops (Ehmsberger et al. 1997).

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Authors' addresses:

Maria Sterzyńska, Museum and Institute of Zoology PAS, Wilcza 64, 00-679
Warszawa, Poland

Rainer Ehrnsberger, University of Vechta, Driverstr. 27, 49377 Vechta, Germany

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