

A NEW SILVERFISH OF ECONOMIC IMPORTANCE FOUND IN THE UNITED STATES (THYSANURA: LEPISMATIDAE)

CLYDE S. BARNHART

Department of Zoology and Entomology, The Ohio State University, Columbus 10

Thysanura (silverfish) have been infesting the basement rooms of the Main Library on the Ohio State University campus for at least twenty years. Since 1947, the writer has made repeated collections of silverfish from this infestation. Among approximately 500 specimens taken, none was *Lepisma saccharina* Linnaeus, one was *Thermobia domestica* (Packard), and the rest were of the genus *Ctenolepisma* Escherich, species unknown.

The name chosen for this new species is to honor Dr. F. L. Campbell, former Professor of Entomology at Ohio State University.

Ctenolepisma campbelli n. sp.

Figures 1-10

Female (fig. 1) Length: Body, 8 mm. Antennae, 8 mm. Cercus, 6 mm. Median caudal filament, 9 mm. Ovipositor as seen from below, 1 mm. Stylus (D), 0.5 mm. Thorax equals half of body length. Width: Body, 2 mm. Abdomen equals thorax in width. Thoracic segments weakly arched. Abdominal segments I-III taper outward posteriorly at their lateral margins. Segments V-VIII taper inward posteriorly at their lateral margins. Color: Body, nearly transparent. Dorsal surface with silvery grey scales. Ventral surface with nearly white scales. Appendages, transparent. An inconspicuous reddish granular pigment occurs in all appendages. Pigment more conspicuous in dried specimens. Cerci and median caudal filament with non-pigmented segment at intervals. Dorsal setal combs occur on the caudal margins of the 3 thoracic tergites, 1 comb on each side (A). Setal combs occur on the lateral margins of abdominal tergites I-VIII, 1 comb on each side (B). Setal combs occur on the caudal margins of abdominal tergites II-VI, one comb on each side (C). One pair of styli (D). Compound eyes with 12 ommatidia.

Setae on medial setal areas of the head (E) arranged in straight orderly widely spaced rows (fig. 2).

Distal segment of the labial palpus (fig. 3) nearly equal in length to the penultimate one and with 5 large elongate sensory papillae (F).

Thoracic sternal plates (fig. 4) heart shaped. Prosternal plate with 5 pairs of setal combs (G). One pair of setal combs occurs on each the mesosternal plate and the metasternal plate.

Maxillary palpi (fig. 5) 5-segmented.

EXPLANATION OF FIGURES

Ctenolepisma campbelli n. sp.

1. Entire insect, dorsal view. A, thoracic tergal setal combs. B, abdominal lateral tergal setal combs. C, abdominal inner tergal setal combs. D, stylus. E, medial cephalic setal area.

2. Medial cephalic setal area showing arrangement of setae.

3. Labial palpus. F, sensory papillae.

4. Thoracic sternal plates. G, setal combs.

5. Maxillary palpus.

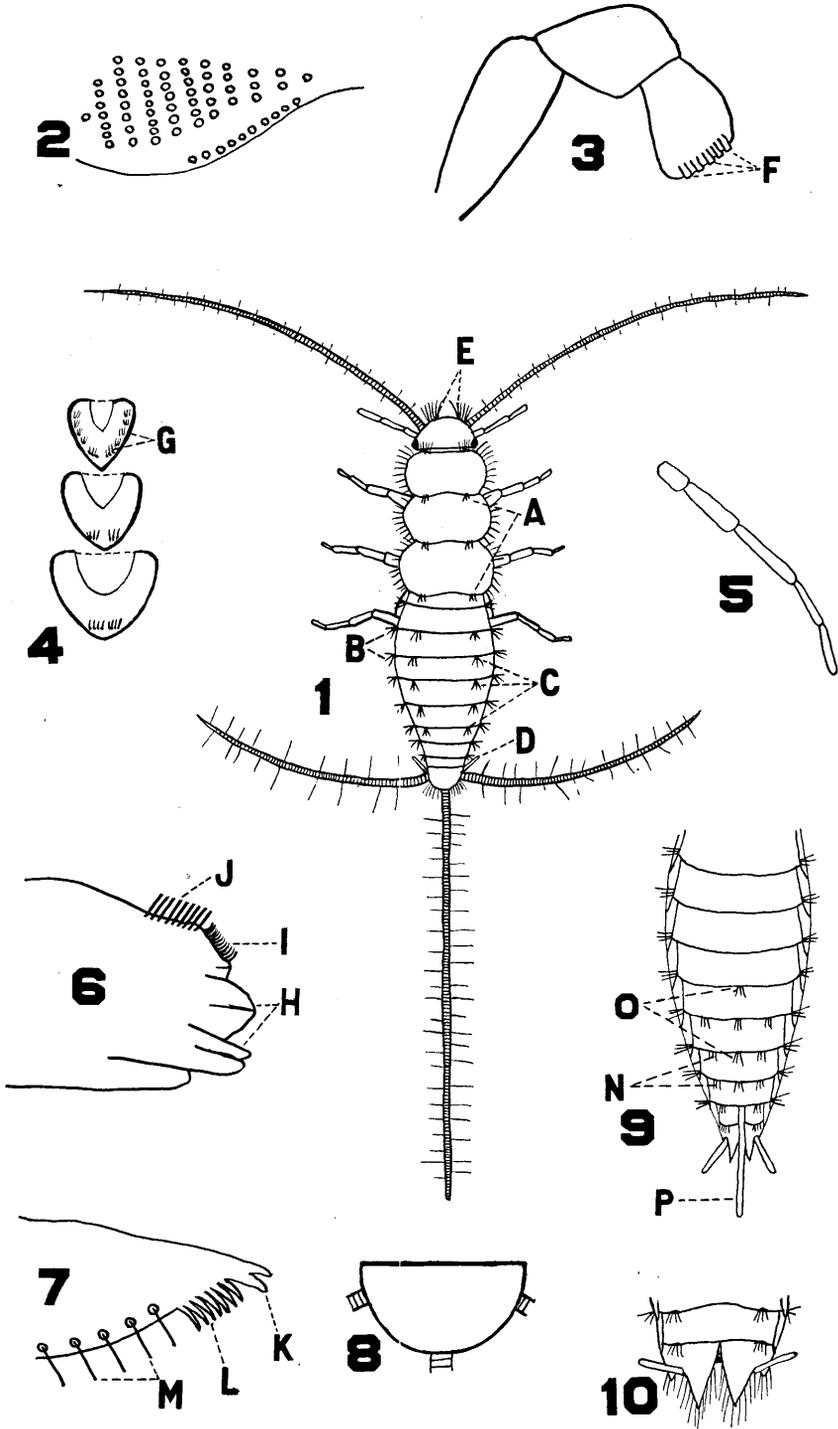
6. Mandible. H, heavily sclerotized teeth. I, marginal comb with about 20 curved teeth. J, 8 or 9 fused setae.

7. Lacinia. K, heavily sclerotized tooth. L, comb-like structure having 7 teeth. M, 5 setae arising from distinct alevoli.

8. Tergite X.

9. Female abdomen, ventral view. N, sternal setal combs. O, medial setal combs. P, ovipositor.

10. Sternites IX and X of the male abdomen.



Mandible (fig. 6) with 2 heavily sclerotized teeth (H) followed on the inner margin by a comb-like structure with about 20 closely set curved teeth (I) followed by 8 or 9 heavy setae (J) each apparently formed by the fusion of 2 closely set setae into one.

Lacinia (fig. 7) terminated by a single bifurcate heavily sclerotized tooth (K) followed on the inner margin by a comb-like structure with 7 transparent teeth of uniform size (L) followed by 5 widely spaced setae (M) set in distinct alveoli.

Tergite X (fig. 8) rounded with length equal to combined lengths of tergites VIII and IX.

Setal combs occur on the caudal margins of abdominal sternites V-IX (fig. 9) one on each side (N). Setal combs occur on the mid-ventral line on abdominal sternites IV-VII (O). Ovipositor extending beyond segment X and visible from above (P).

Male (fig. 10) about one-fifth smaller than the female and otherwise like the female except for differences in genitalia and the appearance of abdominal sternite IX.

This species differs from *Ctenolepisma urbana* Slabaugh, *Ctenolepisma quadriseriata* (Packard), and *Ctenolepisma longicaudata* Escherich by the number of styli and the body length of mature individuals. *C. urbana*, *C. quadriseriata*, and *C. longicaudata* measure 15, 15, and 14 mm. body length as adults and have 2, 3, and 2 pairs of styli respectively while *C. campbelli* measures a maximum of 8.5 mm. in body length and has only 1 pair of styli.

This species can be easily mistaken for immature stages of *C. longicaudata* since *C. longicaudata* acquire the second pair of styli in the 11th instar for the female and in the 9th instar for the male. In both species the medial setal tufts of the head are arranged in definite widely spaced rows and both species lack emargination of tergite X. They may be readily differentiated since *C. campbelli* has only 5 sensory papillae on the labial palpus while the *C. longicaudata* palpus has from 9 to 12 sensory papillae.

Holotype female. Columbus, Ohio, January 1951, from The Ohio State University Main Library. *Allotype* and *paratypes* from the same locality. *Holotype*, *allotype*, and *paratypes* (one male, one female) deposited in the collection of The Ohio State University Department of Zoology and Entomology Museum, Columbus 10. Also *paratypes* (one male, one female) sent to each of the following: The United States National Museum, Washington 25, D. C., The Illinois Natural History Survey Museum, Urbana, Illinois, and The Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.

REMARKS

Shipments of books from other parts of the world are stored in the basement rooms of the library where this species was found. This suggests a possible introduction from some other country. *C. campbelli* is well established in this library building and is apparently spreading to other locations. This species has been collected by the writer in the library and basement of one other campus building and from an apartment house over 2 miles away.

The importance of this insect economically is similar to the other domestic species of Lepismatidae. The damage to books is largely to the covers. In the O. S. U. infestation only a few books are seriously damaged. Often a newly captured insect will show colored intestinal contents corresponding to the color of the book cover on which it recently fed.

The writer is pleased to acknowledge assistance from Miss Grace E. Glance of The United States National Museum Staff and Dr. Charles L. Remington, Osborn Zoological Laboratory, Yale University, New Haven 11, Connecticut, who both kindly examined specimens.