

EVOLUTIONARY SYSTEMATICS OF XENYLLA. XII. REDESCRIPTION OF *X. OCCIDENTALIS* WOMERSLEY AND A COMPARISON OF THE CHAETOTAXY OF *X. ARENOSA* UCHIDA AND TAMURA AND *X. LITTORALIS* WOMERSLEY (INSECTA: COLLEMBOLA)

by

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ABSTRACT

GAMA, M.M. da. 1981. Evolutionary systematics of *Xenylla*. XII. Redescription of *X. occidentalis* Womersley and a comparison of the chaetotaxy of *X. arenosa* Uchida and Tamura and *X. littoralis* Womersley (Insecta: Collembola). *Rec. S. Aust. Mus.* 18(10): 223-226.

X. occidentalis is redescribed from Womersley material; the chaetotaxy of *X. arenosa* is given showing it to be distinct from *X. littoralis*. The phylogenetic position of these species is also considered.

OBSERVATIONS AND DISCUSSION

Xenylla occidentalis Womersley, 1934

(Fig. 1)

Material examined

Western Australia: Red Hill, Kalamunda, on fungus, D.C.S., 30.V.1931, 6 specimens identified by Womersley.

Redescription

Body length: 0.56-0.74 mm. Blue. Cutaneous granulation relatively coarse.

Dorsal chaetotaxy showing the following characters.

Head: all setae present; L_1 equal in length to L_3 .

Th.II-III: all setae present and central ones arranged in five rows (characters h_1 , h_2).

There are 2 S.s. on each side, one in position P_4 .

Abd.I-III: S.s. = P_6 ; p_5 absent.

Abd.IV: S.s. = P_5 .

Abd.V: S.s. = P_3 ; a_2 present.

Ventral chaetotaxy presenting the following features

Head: all setae present.

Th.II-III: without setae (character t).

Abd.II: p_1 and p_2 absent (character v).

Abd.III: without medial setae nor median seta.

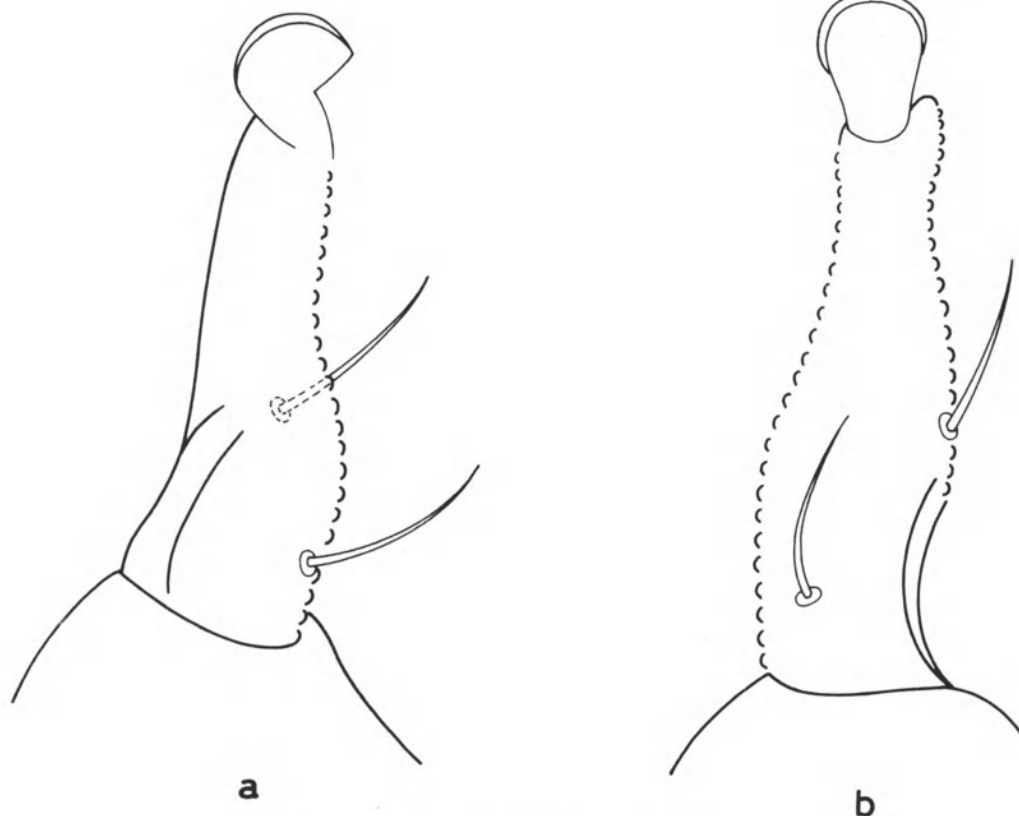


Fig. 1—*Xenylla occidentalis*. a—Mucedens in profile; b—Mucedens, postero-dorsal view.

Abd. IV: the following setae absent— m_1 (character a_4), m_2 (character a_5) and m_3 (character a_6).

Antenna IV with four cylindrical sensillae, of which three are in outer dorsal position and one is in the inner dorsal position.

5 ± 5 eyes.

Unguis without inner tooth. Tibiotarsus with two dorsal and two ventral long, clavate tenent hairs. Tenaculum with 3 ± 3 barbs. Mucro spoon-shaped (Fig. 1), about $1/4$ – $1/5$ of length of dens, separated from it, which has two setae. The mucro is about half as long as unguis III. Anal spines not able to be observed.

Systematics and evolution

The chaetotaxic characters (h_1 , h_2 , t , v , a_4 , a_5 , a_6) mentioned in the redescription place this species in the position indicated in the phylogenetic tree (Gama and Greenslade 1981).

Xenylla arenosa Uchida and Tamura, 1967

(Fig. 2)

Material examined of *X. littoralis* (see Gama 1980a)

South Australia: Yorke Peninsula, Jolly's Beach, 7 specimens (identified by Gama); Yorke Peninsula, Royston Head, 8 specimens (identified by Gama); Christies Beach, 4 specimens (identified by Womersley); Marino Rocks, 2 specimens (identified by Womersley).

Western Australia: Rottnest Island, 1 cotype (identified by Womersley).

Japan, Cape Tachimachi, 9 specimens (identified by Gama).

Material examined of *X. arenosa*: Japan, Akkeshi, 3 paratypes, leg. H. Tamura, 28.VI.1965.

Systematics and evolution

X. arenosa belongs to the most primitive group of species (*welchi*, *malayana*, *portoricensis*, *bellingeri*, *subbellingeri*, *thibaudi* and *littoralis*) in which the central setae on thoracic tergites II–III are arranged in three rows (absence of characters h_1 , h_2)—see phylogenetic trees in Gama 1980b and Gama and Greenslade 1981. As well, these species have no setae on thoracic sternites II–III (character t).

Dorsal chaetotaxy (Fig. 2): there are supernumerary setae, not represented in Figure 2, on the thoracic and abdominal tergites, principally on th. I, lateral parts of th. II–III and abd. I–IV, and one can observe a differentiation into macrochaetae and microchaetae.

Head: p_1 absent (character b); L_1 equal in length to L_3 ; L_0 as long as L_1 and L_3 (unusual in the genus *Xenylla*).

Th. II–III: central setae arranged in three rows; m_3 absent (character k); there are 2 S.s. on each side, one of which is in position P_4 .

Abd. I–III: S.s. = P_6 ; p_2 present.

Abd. IV: S.s. = P_5 ; m_3 absent (character o); a_3 present.

Abd. V: S.s. = P_3 ; a_2 present.

Ventral chaetotaxy:

Head: p_1 and m_3 absent (character r , s).

Th. II–III: without setae (character t).

Abd. II: all setae present.

Abd. III: without medial setae nor median seta.

Abd. IV: all setae appear to be present though difficult to distinguish.

Comparison of the chaetotaxy of *X. arenosa* with that of *X. littoralis*

A study of the descriptions of these two halophilous species, the former known from Japan and the latter from Australia and Japan (Gama 1980a, p. 123) might lead one to think that they are one and the same. For a brief comparison of the adaptive characters between *X. arenosa* and *X. littoralis* (see Gama 1980a, p. 123–125).

However, an examination of their chaetotaxy indicates that they are distinct species separated by the following nonadaptive characters (Fig. 2, this paper, and Fig. 1, in Gama 1980a).

Dorsal chaetotaxy: on the head p_1 is absent in *X. arenosa* (character b) and present in *X. littoralis*; in this latter species L_1 is longer than L_3 (character f), whereas in the former these two setae are equal in length. On the th. II–III m_3 is absent in *X. arenosa* (character k), and present in *X. littoralis*. On the abd. IV m_3 is absent in *X. arenosa* (character o) and present in *X. littoralis* in which p_3 is absent (character n), whereas in *X. arenosa* p_3 is present.

Ventral chaetotaxy: on the head p_1 and m_3 are absent in *X. arenosa* (characters r , s) and present in *X. littoralis*. On the abd. II all the setae are present in *X. arenosa*, while in *X. littoralis* p_1 and p_2 are absent (character v) and p_6 also (character w).

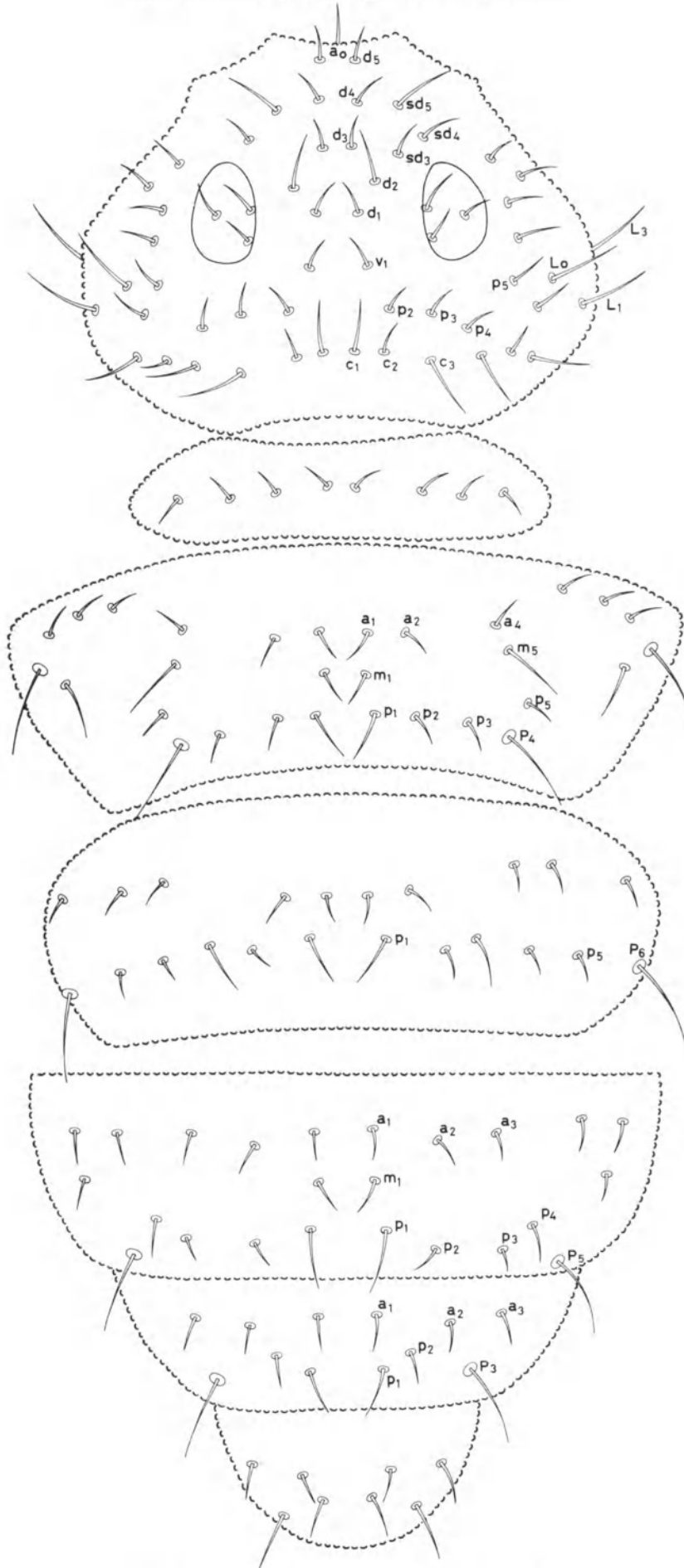


Fig. 2—*Xenylla arenosa*. Dorsal chaetotaxy of head, th. I-II and abd. I, IV-VI.

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