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## Occurrence of *Tuxenentulus* (Protura, Acerentomidae) in North America

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**Synopsis** The second species of the genus *Tuxenentulus* IMADATÉ is described from North America. The new species, *T. rockyensis*, is similar to Japanese *T. ohbai* in many respects, but differs from the latter in the relative length of foretarsal sensilla  $a'$ , body chaetotaxy, and the ratios PR and BS.

The genus *Tuxenentulus* was erected by the present author (IMADATÉ, 1974) as a component of the *Acerentulus* complex, since it shows an interesting combination of characters from *Acerentulus* and *Baculentulus*, that is, the developed labial palpus of the former, and the reduced striate band on abdomen VIII of the latter, and since it is also peculiar in the structure of the canal of maxillary gland. Only a single species has so far been known in this genus; it is *T. ohbai* from northern Japan.

Studying North American proturans, I came across several specimens of a proturan apparently belonging to this genus in the collection of the College of Agriculture, University of California, Berkeley, and also in the collection of Dr. BONET, Mexico, now in the Zoological Museum of Copenhagen. Though closely similar to the Japanese one, it can be recognized as a new species, the description of which will be given in the present paper.

As is well known, the distributional ranges of such genera belonging to the *Acerella* complex as *Nipponentomon*, *Yamatentomon*, *Filientomon* and *Verrucoentomon*, stretches over the boreal and temperate areas in East Asia and North America. It is of particular interest from the zoogeographic point of view that *Tuxenentulus*, which belongs to the *Acerentulus* complex, shows a similar pattern of distribution in the Northern Pacific Regions.

I wish to express my hearty thanks to Professor J. A. POWELL and Dr. S. L. TUXEN for the privilege of studying the interesting material, and to Dr. Shun-Ichi UÉNO for kindly reading the original manuscript and for giving valuable advice.

### *Tuxenentulus rockyensis* sp. nov.

(Figs. 1–3)

*Specimens examined.* 4 ♂, 1 ♀, Hayden Lake, Idaho, U.S.A., 30–VII–1959, collected by F. C. RANEY (Coll. University of California). 1 ♀, Fern Wood, Idaho, U.S.A., 18–VII–1950, collected by K. A. CHRISTIANSEN (Coll. Dr. BONET).

Body length 1,100–1,200  $\mu$  in expanded specimens.

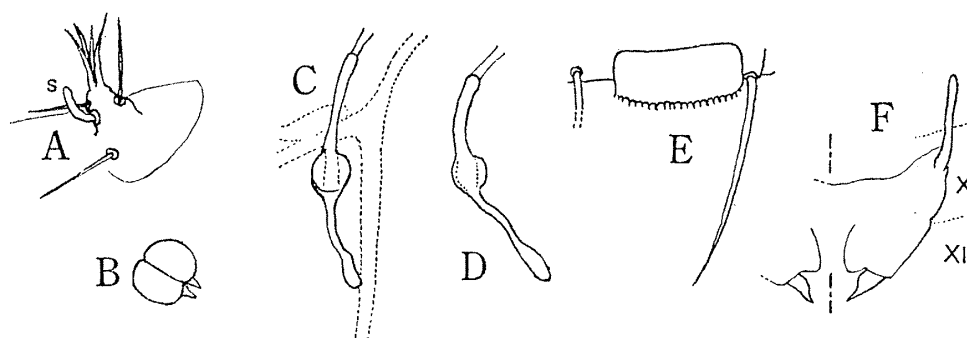


Fig. 1. *Tuxenentulus rockyensis* sp. nov. A, Labial palpus, s: sensilla; B, pseudoculus; C, canal of maxillary gland, dorsal view; D, ditto, lateral view; E, comb on abdomen VIII; F, female squama genitalis; X, sternite X; XI, sternite XI.

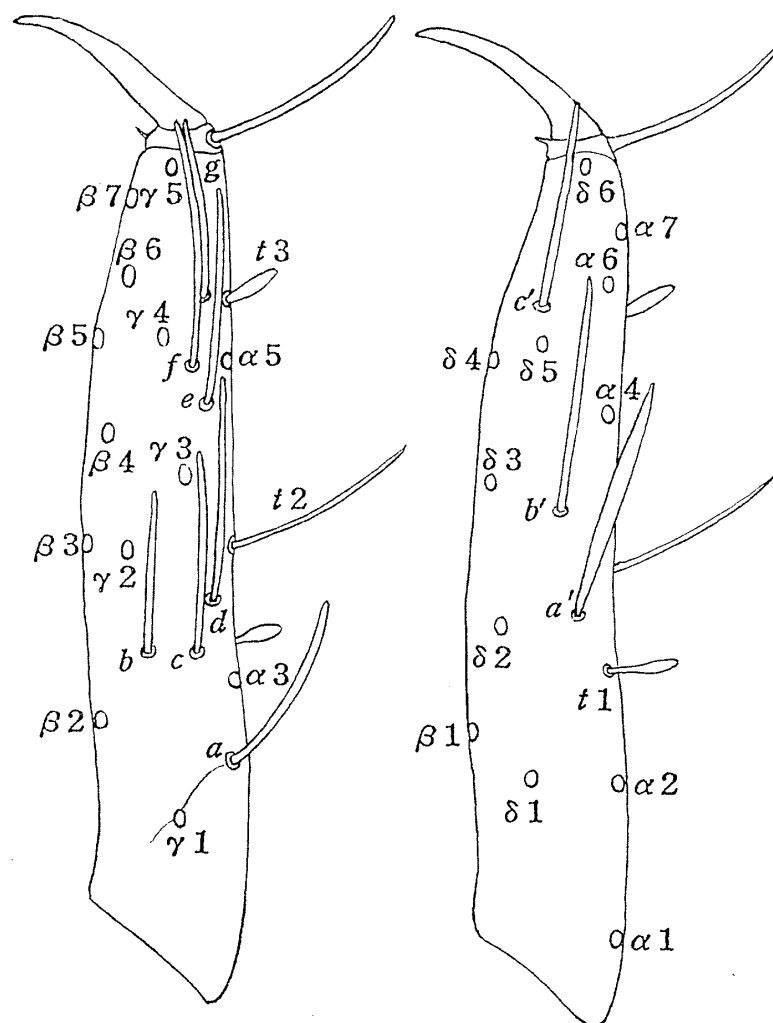


Fig. 2. *Tuxenentulus rockyensis* sp. nov. Foretarsus, exterior (left) and interior (right) views.

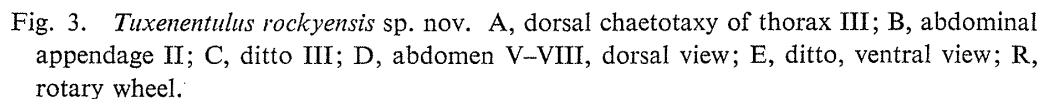
Head oval, 120–130  $\mu$  in dorsal view. Mouthparts small. Labial palpus ornamented apically with a tuft of setae, and basally with a stout sensilla. Pseudoculus circular, with two small lids, PR=15–17. As in *T. ohbai*, canal of maxillary gland relatively thick, with globular calyx, and the proximal parts rather short (Fig. 1 C & D).

Foretarsus 95–105  $\mu$  (85  $\mu$  in the specimen from Fern Wood), claw relatively short, TR=3.9–4.0; empodium very short, EU=0.07–0.08; S-shaped seta a little longer than the claw. Dorsal sensilla *t*-1 claviform, BS=0.6–0.7; *t*-2 thin; *t*-3 not pointed apically. Exterior sensilla *a* normal; *b* relatively short, its apex not surpassing the base of *r* 3; *c* at the same level with *b*, and a little longer than *b*; *d* at about a half way between *c* and *t*-2; *e* very close to *f*; *f* and *g* surpassing the tarsus. Interior sensilla *a'* broad, its apex surpassing the base of *a* 4; *b'* thin; *c'* long, its apex surpassing the tarsus.

Table 1. Chaetotaxy of *Tuxenentulus rockyensis* sp. nov.

|         |        | Dorsal          |   | Ventral                                     |
|---------|--------|-----------------|---|---|
| Thorax  | I      | 4               |   | $\frac{4-4}{6}$ A 1, 2, M 1, 2<br>P 1, 2, 3 |
|         | II–III | $\frac{6}{16}$  | A 2, 4, M<br>P 1, 1a, 2, 2a, 3, 4, 5, 5a    | $\frac{7-2}{4}$ A c, 2, 3, 4, M<br>P 1, 2   |
| Abdomen | I      | $\frac{6}{12}$  | A 1, 2, 5<br>P 1, 1a, 2, 2a, 3, 5           | $\frac{3}{4}$ A c, 2<br>P 1, 2              |
|         | II–III | $\frac{6}{16}$  | A 1, 2, 5<br>P 1, 1a, 2, 2a, 3, 4, 4a, 5    | $\frac{3}{5}$ A c, 2<br>P c, 2, 3           |
|         | IV–V   | $\frac{6}{16}$  | A 1, 2, 5<br>P 1, 1a, 2, 2a, 3, 4, 4a, 5    | $\frac{3}{8}$ A c, 2<br>P 1, 1a, 2, 3       |
|         | VI     | $\frac{8}{16}$  | A 1, 2, 4, 5<br>P 1, 1a, 2, 2a, 3, 4, 4a, 5 | $\frac{3}{8}$ A c, 2<br>P 1, 1a, 2, 3       |
|         | VII    | $\frac{6}{16}$  | A 2, 4, 5<br>P 1, 1a, 2, 2a, 3, 4, 4a, 5    | $\frac{3}{8}$ A c, 2<br>P 1, 1a, 2, 3       |
|         | VIII   | $\frac{6-8}{8}$ | A 1, 3, 5, M 1, 2, 3, 4<br>P 1, 2, 3, 4     | $\frac{4}{2}$ 1, 2<br>P                     |
|         | IX     | 14              | 1, 2, 3, 3a, 4, 4a, 5                       | 4   |
|         | X      | 12              | 1, 2, 3, 3a, 4, 5                           | 4   |
|         | XI     | 6               |   | 9   |
|         | XII    | 9               |   | 6   |

Chaetotaxy as shown in Table 1. Dorsal accessory setae P 1a and 2a on thoraces II–III and abdomen I–VI very short, sensilla-like, shorter than 1/10 the length of the principal setae, while those on abdomen VII are relatively long, seta-like, more than 1/4 the length of the principal. The extra pair P 1a' lacking on all abdominal tergites. The third principal pair of posterior setae, P 3, is situated a little anterior to the row of P 1, 2 and 4 on abdominal tergites II–VI. Abdominal sternite VIII with double rows of setae, four middle and two posterior.



Of the six specimens examined, one male from Hayden Lake has the seta A 1 on the right side of the abdominal tergite VII and Mc on the tergite VIII, but is

lacking in M 1 on the latter. This is presumably due to an individual abnormality.

### Reference

- IMADATÉ, G., 1974. Contribution towards a revision of Japanese Protura. *Rev. Écol. Biol. Sol*,  
10 (for 1973): 597-622.