

Contribution to the Proturan Fauna of Korea*

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Abstract—Six Proturan (*Acerentomidae*) species from N Korea are discussed and one new (*Berberentulus durumagi* sp. n.) described.

The Proturan fauna of Korea has been very poorly investigated. A single species, *Nipponentomon nippon* (YOSII) was known from Kosigul Cave, Prov. Kwangweon, as the only record of Korean Protura (IMADATÉ 1966).

In 1970, the Hungarian Natural History Museum, in co-operation with the Zoological Research Institute of the Korean Academy of Sciences, made a preliminary survey of the Korean fauna. Among the zoological specimens collected by the expedition, 15 Proturan specimens were included. I was given opportunity to examine them through the courtesy of Dr. S. MAHUNKA of the Hungarian Natural History Museum and his colleagues, to whom I wish to express cordial thanks.

All 15 specimens belong to the family Acerentomidae and represent six species, including one new as follows:

No. 24**—Sa-gam po (Prov. South Phenan), 24 V 1970, *Berberentulus morikawai* (IMADATÉ et YOSII) 1 ♂.

No. 50–2. Environs of the Hotel Go-song, Kum-gang san (Prov. Kanwon), 29 V 1970. *Nipponentomon nippon* (YOSII) 3 ♀ and 1 preimago (♂); *N. uenoi* IMADATÉ et YOSII 2 ♂ and 3 ♀; *B. morikawai* 1 ♀.

No. 55–1/2. Sam-il po, Kum-gang san (Prov. Kanwon), 29 V 1970, *Acerella shirampa* IMADATÉ 1 ♀.

No. 55–3. Ditto, 29 V 1970, *Berberentulus durumagi* sp. n. 1 ♂ and 1 ♀.

No. 63. Man-mul san, Kum-gang san (Prov. Kanwon), 30 V 1970, *N. uenoi* 1 ♀, *Yamatentomon takanawanum* (IMADATÉ) 1 ♀.

1. *Acerella shirampa* IMADATÉ, 1964 — Foretarsus 83 μ in length, TR = 2.5. Compared with Japanese specimens, the Korean female from Sam-il po (55–1/2) differs only in its slightly longer empodium (EU = 0.15; 0.12–0.14 in Japanese adults) and in the position of the foretarsal sensilla *a'*, which is slightly proximal to *t*-2. These differences are regarded as within the infraspecific variation.

Distribution: Japan; new to Korea.

2. *Yamatentomon takanawanum* (IMADATÉ, 1956) — Foretarsus 124 μ in length, TR = 2.8. All the specific features of the Korean female from Man-mul san (63) are similar to those of Japanese specimens.

Distribution: Japan; new to Korea.

* Zoological Collectings by the Hungarian Natural History Museum in Korea, No. 11. Participants Dr. S. MAHUNKA and Dr. H. STEINMANN.

** The serial numbers correspond to those in MAHUNKA & STEINMANN (1971).

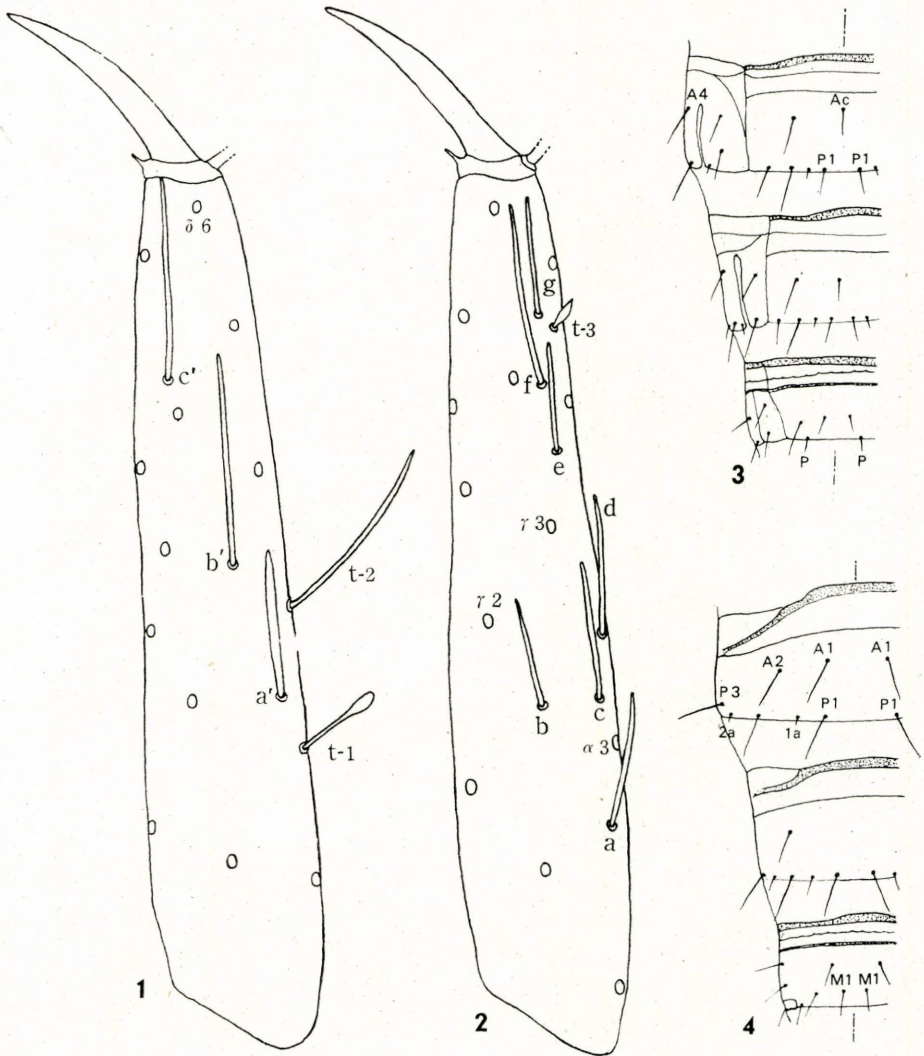
3. *Nipponentomon nippon* (YOSII, 1938) — Foretarsus 86–90 μ (74 μ in the preimago) in length. The abdominal chaetotaxy does not differ between the Japanese specimens and the Korean ones from Kumgang san (50–2).

Distribution: Japan and Korea.

4. *N. uenoi uenoi* IMADATÉ et YOSII, 1959 — Foretarsus 104–107 μ in length. No significant difference between the Korean specimens from Kum-gang san (50–2) and Man-mul san (63) and the Japanese specimens is found.

Distribution: Japan; new to Korea.

5. *Berberentulus morikawai* (IMADATÉ et YOSII, 1956) — Foretarsus 91 and 94 μ in length, BS=0.48–0.50. All the specific features of the Korean specimens from Sa-gam po (24) and Kum-gang san (50–2) are the same as those of the Japanese specimens.



Figs. 1–4. *Berberentulus durumagi* sp. n. — 1–2 Foretarsus: interior side (1) and exterior side (2) — 3–4 Chaetotaxy of abdomen VI–VIII: ventral side (3) and dorsal side (4).

Berberentulus durumagi sp. n. (Figs. 1-5)

This new species is similar to Australian species, such as *B. validus* and *B. aestuarii*, in its short foretarsal sensilla *b*, in the presence of *b'* on its foretarsus, as well as in the presence of accessory setae *P 1a* on abdominal terga I-VII. The two Australian forms differ from the new Korean species in the absence of posterior setae on abdominal sternite VIII. They lack anterior setae *A 4* on tergite VI and differ in the size of foretarsal sensilla *e* as well.

Body length 710-720 μ in two unexpanded adults. Mouthparts small. Maxillary palpus rather clumsy. Sensillae on maxillary palpus stout, that on labial palpus short and broad. Pseudoculus almost circular, PR=15-16. The "filamento di sostegno" of the maxilla simple and its proximal part relatively short.

Foretarsus (Figs. 1-2) 89-94 μ in length, TR=3.7-3.9. Empodium short, EU=0.11. Dorsal sensilla *t-1* baculiform, slightly distal to α 3 and BS=0.5-0.6; *t-2* thin and long; *t-3* short. Exterior sensilla *a* relatively short; *b* and *c* in the same row; *b* shorter than *c*, its apex slightly surpassing base of γ 2; *d* slightly distal to *c* and subequal to *c* in length; *e* nearer to *f* than to *d* and apex not surpassing base of *t-3*; *f* thin; apices of *f* and *g* not surpassing tarsus. Interior sensilla *a'* broad and ensiform; *b'* thin and long, its apex reaching base of *c'*; *c'* also thin and long, its apex fairly surpassing base of δ 6.

Thoracic chaetotaxy similar to that of other *Berberentulus*-forms, but ventral *M 2* on thorax I present as in *Acerentulus*-species; e.g. *A. kisonis*. Dorsal *P 5a* on thorax II-III rudimentary. Tergal accessory setae *P 1a* and *2a* on abdominal tergite I and *P 1a*, *2a* and *4a* on terga II-VI short and less than 1/5 of *P 1*, but *P 1a*, *2a*, *3a* and *4a* on tergite VII relatively long and more than 1/3 as long as *P 1*. On terga I-V three pairs of anterior setae (*A 1*, *2* and *5*), on tergite VI four pairs (*A 1*, *2*, *4* and *5*) present. Tergite VII with three pairs of anterior setae; *A 2*, *4* and *5*. Middle setae on tergite VIII consisting of eight, as in *B. morikawai* and its allies.

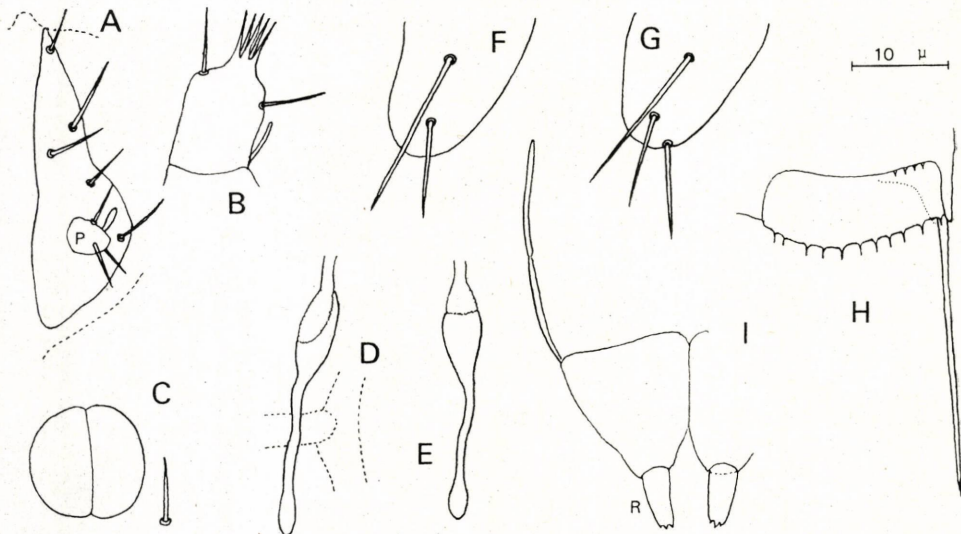


Fig. 5. *Berberentulus durumagi* sp. n. A: -labium, B: maxillary palpus, C: pseudoculus, D & E: "filamento di sostegno" of maxilla, F: abdominal appendage III, G: an abnormal pattern on abdominal appendage II in one male specimen, H: comb on abdomen VIII, I: female squama genitalis, P: labial palpus, R: acrostylus.

Ventral chaetotaxy of abdomen I–VII normal, but that of sternite VIII conspicuous in having double rows of setae, four middle and two posterior setae.

In one male specimen examined, an extra central seta was found in the posterior row of abdominal tergite VII, but this is an individual abnormality. No other chaetotaxial abnormalities were found.

Abdominal appendages II–III each have two setae and the spical seta is less than $\frac{2}{3}$ the length of the subapical one. In one male specimen, three setae were found on one of the abdominal appendage II, as in some Australian forms of the same genus (Fig. 5–G). The band on abdomen VIII is reduced. The band has no striae and the posterior margin, rather thickly sclerotized, is $1.5\text{--}2\ \mu$ wide. The comb on both sides of tergite VIII is inconspicuous and consists of about 10 teeth of regular size. Other pectinated structures on abdominal segments are undeveloped.

The female squama genitalis is characterized by the tripartite apex of its acrostylus (Fig. 5–I).

Holotype: 1 ♂, Sam-il po, Kum-gang san, Prov. Kanwon, Korea, 29 V 1970.—
Allotype: 1 ♀, data as for holotype.

Distribution: Korea.

Notes: The specific name is derived from Korean folklore. — The holotype is preserved in the Hungarian Natural History Museum (Budapest) with the other paratype specimens described in the present paper. The allotype is deposited in the National Science Museum (Tokyo).

Chaetotaxy of *Berberentulus durumagi* sp. n.

Dorsal	Formula	Composition of setae	Ventral	Formula	Composition of setae
Thorax I	4	1, 2	Thorax I	$\frac{4-4}{6}$	A 1,2,M1, 2 P 1,2,3
II–III	6	A 2, 4, M	II–III	$\frac{7-2}{4}$	A c,2,3,4, M, P 1,2
	14(16)	P 1,1a,2,2a,3,4,5,(5a)			
Abdomen I	6	A 1, 2, 5	Abdomen I	$\frac{3}{4}$	A c,2 P 1,2
	12	P 1,1a,2,2a,3,5			
II–V	6	A 1, 2, 5	II–III	$\frac{3}{5}$	A c, 2 P c,2,3
	16	P 1,1a,2,2a,3,4,4a,5			
VI	8	A 1,2,4,5	IV–VII	$\frac{3}{8}$	A c,2 P 1,1a,2,3
	16	P 1,1a,2,2a,3,4,4a,5			
VII	6	A 2,4,5	VIII	$\frac{4}{2}$	1, 2 P
	18	P 1,1a,2,2a,3,3a,4,4a,5			
VIII	$\frac{6-8}{8}$	A 1,3,5,M 1,2,3,4 P 1,2,3,4	IX–X	4	
IX	14	1,2,3,3a,4,4a,5	XI	6	
X	12	1,2,3,3a,4,5	XII	6	
XI	6				
XII	9				

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