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THE SIX SPECIES OF THE GENUS Plattynothrus FROM HOKKAIDO

BY Tokuko FUJIKAWA ¹

TAXONOMY SUMMARY: From Hokkaido in the north of Japan, 4 species and 2 subspecies belonging to the genus Plattynothrus were recorded.

TAXONOMIE ZUSAMMENFASSUNG: Aus Hokkaido in Japan, vier Arten und zwei Underarten der Gattung Plattynothrus sind bekannt.

The present author has reported 3 species and 1 subspecies belonging to the genus Plattynothrus from Hokkaido in the north of Japan (FUJIKAWA, 1972). According to her further study on the same specimens, it was recognized that they should be identified as 4 different species and 2 subspecies, and moreover they often showed a wide range of variability in the leg chaetotaxy and so on, as found in the case of P. peltifer (GRAND-JEAN, 1971). The detailed descriptions of those species and subspecies will be given in the present paper.

Plattynothrus peltifer japonensis Fujikawa, 1972
(Figs. 1-8)

Plattynothrus peltifer japonensis FUJIKAWA, 1972, Insecta Matsumurana, 35 (3), pp. 139-140, fig. 17.

ADULT: Dark reddish-brown in colour. The body ranges in length from 714 to 986 μm with a greatest width of 386-557 μm. The surface of the aspis foveolate (Figs. 1a & b). Rostrum rounded. Seta (ro) strongly roughened; the pair of ro located on an elevation (Fig. 1c). Seta (la) distinctly barbed with apophysis which is situated on a transverse ridge with rather angular lateral projection (Fig. 1d). Seta (il) minutely barbed. The sensillus has setose head (Fig. 1e). The length of seta (ro) about 2 times the distance ro-ro. Seta (la), (ii) and the sensillus nearly equal in length and approximately the same as 1.25 times the distance il-il. The exobothridial seta very short and minutely barbed. The notogaster convex in the lateral sides and the median part, with 3 pairs of longitudinal ridges (Fig. 2a). Fifteen pairs of notogastral setae minutely barbed (Fig. 2b) and short, namely approximately the same as the distance c-r-c1. The relative distances: c-r-c1 = d-r-d1 < e-r-e1 < d-r-d2 and c-r-d1 < d-r-d2 < c-r-d1 < c-r-c2 = c-r-c3. Anal plate has usually 2 setae, however exceptionally it lacks seta an1 (Fig. 3a). Adanal plate has usually 3 setae and exceptionally 4 setae (Fig. 3a). Genital plate has 12 or 13 setae; 2 pairs of aggenital setae are present (Fig. 3b). Setae of ano-genital region slightly roughened. The formula for the epimeral setae: (3-1-3-4) and the setae minutely barbed (Figs. 3c & d). Setae 3b, 3c, 4b, 4c and 4d sube-

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Fig. 1-3: *Platynothrus pelifer japonensis.*

1 a. — Aspis; b. — Surface between il and il; c. — Rostrum; d. — Lamellar setae; e. — Sensillus and bothridium. (1 a = × 150; 1 b-e = × 750).

2 a. — Dorsal view of notogaster; b. — Dorsal seta op 2. (2 a = × 150; 2 b = × 750).

3 a. — Anal region; b. — Genital region; c. — Epimerata; d. — Epimeral seta 3c. (3 a-b = × 300; 3 c = × 150; 3 d = × 750).
FIG. 4-5: Platynothrus petifer japonensis.
4 a-c. — Antiaxial aspect of leg I; (a) tarsus, (b) tibia, (c) genu to trochanter. (= × 720).
5 a-e. — Dorsal aspect of leg II; (a) tarsus, (b), tibia, (c) femur, (d) genu, (e) trochanter. (= × 720).
qual in length, about 2 times the length of seta 1b and about 4 times the length of the rest. There are three pairs of infracapitular setae; an anterior pair (a) of long setae and a median pair (m) of short setae located on the genae and a rather long pair (h) located on the hysterosoma. Laterally there is a single pair of smooth supracoxal setae (e). The formula for the pedipalpal setae: (1-0-3-7) and the solenidion ω is present on the tarsus. The formulae for the leg setae: I (1-9-5-5-25-1); II (1-9-5-5-23-1); III (4-5-4-4-21-1); IV (1-4-4-4-21-1) (Figs. 4-7). One specimen from Mo-Ashoro lacks exceptionally seta v on the right genu IV, namely there are only 3 setae on it. And moreover other specimen from Otoineppu has exceptionally 7 setae on the right tibia II (Fig. 8). The solenidiotaxy: I (1-2-3); II (1-1-2); III (1-1-0); IV (1-1-0). On tarsus I the solenidion ω₁ baciliform and closely associated with the famulus e which is short and setose. Of the three solenidia on tarsus I the longest one is the solenidion ω₂. The solenidion ω₃ which is free, is ceratiform, while ω₂ is piliform. On all legs the tibial and genual solenidia ϕ and σ are coupled each with a dorsal seta.

**Distribution:** The present species was recorded from the coniferous forests in Ashoro, 9-11.XI.1968, Otoineppu, 2.IX.1969 (T. Fujikawa) and the cultivated farm in Nayoro, 15.III.1977 (K. Nishimua & M. Fujita) which are situated in the sub-frigid zone.

**Remarks:** It is impossible to give a detailed comparison between the original drawing of the nominate subspecies (*P. peltifer peltifer* C. L. Koch, 1839) and the present subspecies. The latter is mostly in accord with the descriptions and figures by Sellnick & Forsslünd (1955) and Grandjean (1934 a, b & c, 1935, 1941, 1942, 1946, 1949, 1958, 1971, 1973 and 1974), but differs in the relative distance of setae (c₁-c₇ > d₁-d₇), length of anal and adanal setae, the number of genital setae, and length of epimeral setae. Japanese specimens has, also, many individual variations or anomalies which had already been pointed by Grandjean (1971, 1973 & 1974) for the nominate subspecies.

**Platynothrus yamasakii** (Aoki, 1958) (Figs. 9 & 10)


**Adult:** Dark reddish-brown in colour. The body ranges in length from 693 to 728 μm with a greatest width of 375-392 μm. The surface of the aspis foveolate (Fig. 9b). Seta (la) barbed and situated on the low apophyses connected by a straight ridge. Setae (ro) and (i) strongly roughened. The latter is about 1.5 times the length of seta (la). The sensillus short with setose head. The exobothridial seta very short. The notogaster has laterally 2 pairs of longitudinal ridges (Fig. 9a). All 15 pairs of notogastral setae strongly roughened and longer than the distance c₁-d₁. The relative distances: d₁-d₁ > c₁-c₁ = c₁-c₇ = c₁-d₁ > d₁-d₁. On the most of the specimens the distance d₁-d₁ is approximately the same as e₁-e₁, however on the specimen from Yamabe, the distance d₁-d₁ is slightly shorter than e₁-e₁. Two pairs of anal, 3 pairs of adanal and 2 pairs of aggenital setae strongly roughened (Figs. 10a & b). Genital plate has 11 or 12 genital setae which are rather long and strongly roughened. The formula for the epimeral setae: (3-1-3-4). Of the epimeral setae, 1b, 3b, 3c, 4b, 4c and 4d strongly roughened and about 6 times the length of the rest (Figs. 10d & e). The femur of the pedipalp bears 1 seta, the tibia 3 setae and the tarsus 7 setae and a solenidion (Fig. 10c). The leg chaetotaxy has the same formulae as that of *P. peltifer japonensis*, except that seta v is absent on genua III and IV, namely, I (1-9-5-5-25-1); II (1-9-5-5-23-1); III (4-5-3-4-21-1); IV (1-4-3-4-21-1) (Figs. 9c-f). The solenidiotaxy is: I (1-2-3); II (1-1-2); III (1-1-0); IV (1-1-0). On tarsus I the three solenidia and famulus are inserted on the same situation as in *P. peltifer japonensis*.

**Distribution:** *P. yamasakii* was recorded from litter and humus of the forests including
Fig. 6-7: *Platynothrus peltifer japonensis.*

6 a-c. — Antiaxial aspect of leg III; (a) genu to tarsus, (b) trochanter, (c) femur. (× 780).

7 a-e. — Antiaxial aspect of leg IV; (a) tarsus, (b) tibia, (c) genu, (d) femur, (e) trochanter. (× 780).
cold-temperate broad-leaved tree species such as Castanea crenata, Quercus crispula or Fagus crenata in Nopporo (26.IX.1967), Yamabe (25.V.1968), Ishikari (12 & 13.VIII.1968), Higashi-Misumai (1968-1969) and Kuromatsunai (25.XI.1968) (T. Fujikawa).

**Remarks:** The leg chaetotaxy, and arrangement of solenidia and famulus on tarsus I of P. yamasakii are similar to those of P. peltifer japonensis. The former, however, is different from the latter in the longer dorsal setae, only two pairs longitudinal ridges on notogaster, the absence seta v on genua III and IV, and so on.

*Platynothrus capillatus* (Berlese, 1914)
(Figs. 11-14)

*Angelia capillata* Berlese, 1914, Redia 10, p. 132, pl. 2, fig. 25.

*Platynothrus capillatus:* (in part) Fujikawa, 1972, Insecta Matsumurana, 35 (3), p. 139, fig. 16.

**Adult:** Large and dark reddish-brown in colour. The body size about 1,043 μm in length with a greatest width of 557 μm. Aspis foveolate with rounded rostrum (Fig. 11e). Seta (ro) smooth, seta (la) barbed, seta (ii) minutely barbed and the sensillus barbed (Fig. 11b). The seta (ro) as long as the distance la-la, and about half times the length of seta (la). Seta (ii) about 1.5 times the length of seta (la). The sensillus shorter than seta (la), and the exobothridial seta barbed and short (Fig. 11a). The notogaster oval in shape and the surface is covered with a weak reticulate microsculpture (Fig. 11d). All the dorsal setae smooth without apophyses and long, namely longer than the distance c7-d1. The relative distances: d2-d3 > e1-e1 > d7-d1 = c7-d1 = d2-d2 > c2-c2 > c7-c2 and d2-e1 > d7-d1. Two pairs of anal, 3 pairs of adanal, and 2 pairs of aggenital setae are present and short with the smooth surface (Fig. 11g). Genital plate has twenty long and smooth setae (Fig. 11h). The formula for the epimeral setae: (3-1-3-4), and the setae has a few and minute barbs. Seta 1b, 3b, 4b, 4c and 4d are longer than the rest (Fig. 11f). There are four pairs of infracapitular setae; an anterior pair (a) of long tapering setae and two median pairs (m) of short smooth setae located on the genae and a rather long roughened pair (h) located on the hysterostoma. Exceptionally, there is one specimen with a single seta (m) on the right side of the genae. The chelicera has two barbed setae, cha and chb. The former longer than the latter (Fig. 11c). The leg chaeto-
Fig. 9-10: *Platynothrus yamasakii*.

9 a. — The right side of notogaster; b. — Aspis; c. — Dorsal aspect of genu I; d. — Ventral aspect of genu II; e — Antiaxial aspect of genu III; f. — Antiaxial aspect of genu IV. (9 a-b = × 150; 9 c-f = × 300).

10 a. — Genital region; b. — Anal region; c. — Ventral aspect of pedipalp and genae; d. — Left side of epimerata; e. — Epimeral seta 3c. (10 a-b = × 300; 10 c and e = × 750; 10 d = × 150).
Fig. 11-13: *Platynothrus capillatus.*

11 a. — Sensillus and bothridium; b. — Rostral region; c. — Chelicera; d. — Dorsal aspect of notogaster; e. — Aspis; f. — Left side of epimerata; g. — Anal region; h. — Genital region. (11 a-c = × 288; 11 d = × 272; 11 e-h = × 144).

12. — Dorsal aspect of leg I; (a) tibia and tarsus, (b) trochanter to genu, (c) tip of tarsus. (12 a-b = × 288; 12 c = × 730).

Fig. 14: *Platynothrus capillatus.*
(a) ventral aspect of leg III, trochanter to tibia, (b) antiaxial aspect of tarsus III, (c) dorsal aspect of leg IV, trochanter to tibia. (= × 270).

Fig. 15-16: *Platynothrus capillatus kikonaiensis.*
15 a. — Ventral aspect of camerostome; b. — Seta d on the right genu IV; c. — Genital plates; d. — Antiaxial aspect of tarsus IV. (15 a, c and d = × 270; b = × 675).
16. a. — Dorsal aspect of tarsus I; b. — Ventral aspect of tarsus I; c. — Femur I; d. — Femur II; e. — Femur III; f. — Femur IV. (= × 270).
taxy: I (1-9-5-33-1) ; II (1-10-5-5-28-1) ; III (5-8-4-4-27-1) ; IV (1-6-4-4-27-1) (Figs 12-14). One specimen has exceptionally 5 setae on the left tibia IV. The solenidiotaxy is: I (1-2-3) ; II (1-1-2) ; III (1-1-0) ; IV (0-1-0). On tarsus I the solenidion \( w \) is baciliform in shape and closely associated with the famulus \( E \) which is long, namely about four-fifths times the length of the solenidion \( w \). The solenidia \( Wz \) and \( w_{3} \) which are piliform in shape, are thinner and longer than \( w \). And moreover the solenidion \( Wz \) is coupled with \( w_{3} \) (Fig. 12c).

**DISTRIBUTION**: The specimens were collected from the litter and humus of a natural mixed stand of broad-leaved and coniferous trees in Higashi-Misumai, 1968-1969 (T. FUJIKAWA).

**REMARKS**: According to Dr. NANNELLI's private letter, two syntypes from "Bergamo" are present on the slide No. 148/4 of the Berlese's collection. Dr. NANNELLI gave me the following information about the type specimens: "The body size ranges in length from 990 to 1,029 \( \mu \)m with a greatest width of 530-560 \( \mu \)m; the leg chaetotaxy is I (1-9-5-5-X); II (1-10-5-5-X); III (5-X-4-4-X); IV (1-X-4-4-X), and the solenidiotaxy is I (1-2-X), II (1-1-X), III (1-1-X) and IV (0-1-X), (the symbol X means 'impossible to study')". There seems to be no difference between the type specimens and the copy of the drawing of the Japanese specimens except for the epimeral region and the chelicera which could not be studied in case of the type specimens. Although the present author has recorded all specimens from Hokkaido as *Platynothrus capillatus* (Berlese) (FUJIKAWA, 1972), it was found by the further study that the specimens from Kikonai and those from Higashi-Misumai were different in some characters. The specimens from Kikonai will be described in the following lines.

*Platynothrus capillatus kikonaiensis* subsp. nov. (Figs. 15-16)


**ADULT**: Large and dark reddish-brown in colour. The body size about 1,029 \( \mu \)m in length with a greatest width of about 529 \( \mu \)m. The specimens from Kikonai have approximately the same characters as described in case of the specimens from Higashi-Misumai identified as *Platynothrus capillatus* (Berlese) (Fig. 15a). The former shows, however, the reduction in numbers of genital setae (from 16-19 (Fig. 15c) and leg setae (one accessory seta lacks on tarsi I & IV, and 1 or 2 setae lack on femora I, III or IV), namely leg chaetotaxy: I (1-8-5-5-32-1), II (1-10-5-5-28-1), III (5-6-4-4-27-1), and IV (1-5-4-4-26-1) (Figs. 15d & 16). Exceptionally, one specimen has seta \( d \) of bifid seta on the right genu IV (Fif. 15b).

**TYPE**: Holotype (NSMT-Ac-9184) and 3 paratypes from Yunosato near Kikonai, 29.XI. 1968, T. FUJIKAWA leg. Holotype is deposited in the National Science Museum, Tokyo.

**DISTRIBUTION**: The present subspecies was recorded only from a natural forest consisting of *Fagus crenata* Blume near Kikonai.

**REMARKS**: The present subspecies is approximately similar to the nominate subspecies except for the reduction in number of leg chaetotaxy and genital setae.

*Platynothrus thori* (Berlese, 1904) (Figs. 17-20)

*Angelia thori* BERLESE, 1904, Redia 1, p. 275.

*Nothrus (Heminothrus) thori* : BERLESE, 1913, Redia 9, pp. 99, pl. 7, fig. 83.


**ADULT**: Large and dark reddish-brown in colour. The body size about 805 \( \mu \)m in length with a greatest width of 490 \( \mu \)m. The surface of aspis foveolate (Fig. 17a). The margin of the boss of the tegument has a series of interlocking teeth, which are rounded at the tip (Fig. 18a). Rostrum rounded with barbed setae \( (ro) \). Seta \( (la) \) conspicuously pilose with small apophyses. Seta \( (li) \) barbed and extending beyond rostrum. The sensillus baciliform and barbed. The exo-
bothridial seta barbed and very short. Of all setae on the aspis, the longest one is (il) and the next (la) is approximately 2 times the distance il-il. The notogaster of which the surface is minutely punctate, is wider posteriorly than anteriorly, with straight anterior margin (Fig. 17d). Fifteen pairs of dorsal setae barbed and long, longer than the distance c₁-e₁. The relative distances: \( d₂-d₃ > e₁-e₁ > d₁-d₂ = d₂-e₁ > c₁-c₁ > c₁-c₂ = c₂-c₃ = c₁-d₁. \) The distance \( d₁-d₄ \) very short. Two pairs of anal and 3 pairs of adanal setae are present and short (Fig. 17b). Aggenital setae long and normally 2 pairs are present, however one seta lacks exceptionally on the left side of a specimen from Nopporo. Genital setae are long and vary in number from 14-16. The formula for the epimeral setae: (3-1-3-4). Setae 1b, 3b, 3c, 4b, 4c and 4d longer than the rest (Fig. 17c). There are three pairs of infracapitular setae: an anterior pair (a) of long tapering setae.
and a median pair (m) of short smooth setae located on the genae and a rather long smooth pair (h) located on the hysterostoma. The formulae of the leg setae: I (1-11-5-5-30-1); II (1-10 or 11-5-5-26-1); III (5-6-5-5-26-1); IV (1-6 or 8-5-5-25 or 26-1) (Figs. 19 & 20). The variation in number of the leg setae is found on the tarsus IV and the femora II and IV; namely one specimen from Teine has 10 setae on the femur II, 25 setae on the tarsus IV, 6 setae on the left femur IV and 7 setae on the right one; all specimens from Nopporo has 26 setae on the tarsus IV and 10 setae on the femur II, however one specimen has 11 setae on the femur II and the setae on the femur IV are individually variable in number from 6-8. The solenidiotaxy, I (1-2-3), II (1-1-2), III (1-1-0) and IV (1-1-0) is constant in all specimens examined. On tarsus I, the solenidion $\omega_1$ closely
associated with the famulus $e$ which is rather longer than $w_2$. The solenidia $w_1$ and $w_3$ ceratiform and long, while $w_2$ is piliform and located behind seta $ft^*$ (Fig. 18b).

**Distribution**: *P. thori* was recorded from the upper soil of the grassland in Nopporo, 1966-1967 and Teine, 9.v.1966 (T. Fujikawa).

**Remarks**: According to Dr. Nannelli’s private letter, the type specimen of *Nothus (Heminothrus) thori* Berlese from “Norvegia Thor” is present on the slide 16/38 and does not give any difference on the dorsal view from the copy of the drawings of the Japanese specimens; He gave me the following information about the formulae of the leg setae: I (1-1-5-5-X) ; II (1-10-5-5-X) ; III (X) ; IV (1-6-5-5-X) and the solenidiotaxy I (i-1- X) ; II (1-1-X) ; III (X) ; IV .

*Platynothrus meakanensis* spec. nov. (Figs. 21-23)


**Adult**: Large and dark reddish-brown in colour. The body about 1,057 $\mu$m in length with a greatest width of 630 $\mu$m. The aspis has the fooveolate surface and the boss of the tegument which the margin has a series of interlocking teeth with pointed apex (Fig. 21b). All setae on the aspis barbed and seta $(a)$ the most distinctly barbed. The sensillus bacilliform and as long as seta $(a)$ which is approximately 2 times the distance $ii$-$ii$. Seta $(ii)$ the longest one of all setae on aspis, extending to the rostral margin. The tips of seta $(ii)$ of one specimen are, however, never reaching the level of the insertions of setae $(ro)$ (Fig. 21a). The posterior margin of the aspis has rather rectangular in shape. The notogastral surface is minutely punctate, and wider posteriorly than anteriorly with straight anterior margin (Fig. 21c). Fifteen pairs of dorsal setae minutely barbed and longer than the distance $ct$-$ct$. The relative distances: $d_2$-$d_2 > e_1$-$e_1 = d_2$-$d_2 > c_1$-$c_1 > c_1$-$c_1 = c_1$-$c_1 > d_1$-$d_1$. Two pairs of anal and 3 pairs of adanal setae are present and shorter than 2 pairs of aggenital and genital setae which varies 11 or 13 in number on each genital plate. The formula for the epimeral setae: (3-1-3-4). Seta $1b$, $3b$, $4b$, $4c$ and $4d$ longer than the rest (Fig. 22b). Seta $4d$ is exceptionally short on one specimen of which the left anal plate has 2 fissures $ian$ (Fig. 22a). The infracapitulum has one anterior pair $(a)$ of long smooth setae and two median pairs $(m)$ of short smooth setae located on the genae a rather long posterior pair $(h)$ located on the hysterostoma (Fig. 22c). The femur of the pedipalps bears one seta, the tibia 3 setae and the tarsus 7 setae and a solenidion. The leg setae are rather variable in number as shown in the following table 1 of four different specimens collected from the same soil sample: Table 1. On tarsus 1 both the solenidia $w_1$ and $w_2$ are closely associated with the famulus $e$ which is slightly shorter than $w_2$. Of all the solenidia which are ceratiform, the solenidion $w_2$ is the shortest and located on the same level to seta $ft^*$ (Fig. 23).

**Types**: Holotype (NSMT-Ac-9186) and 4 paratypes, from *Picea glehni* forest, Mo-Ashoro, 9-11.XI.1968 (T. Fujikawa). Holotype is deposited in the National Science Museum, Tokyo.

**Distribution**: The present species was collected only from the soil of a natural forest in Mo-Ashoro.

**Remarks**: The present species is similar to *P. thori*. However, the former is different from the latter in the shape of the marginal teeth on
Fig. 21-22: *Platynothrus meakanensis.*

21 a. — Aspis; b. — Dorsal aspect of the boss of the tegument; c. — Dorsal aspect of notogaster. (21 a = × 174,9; 21 b = × 349,8; 21 c = × 87,45).

22 a. — Anal region; b. — Left side of epimerata; c. — Ventral aspect of camerostome. (22 a and c = × 349,8; 22 b = × 174,9).
pedotectal, the number of setae on the genae, the location of the solenidion \(w_2\) on tarsus I and the leg chaetotaxy.

**Figure 23:** *Platynothrus meakanensis*, dorsal aspect of left tarsus I (\(= \times 622.5\)). On it the surmenerary solenidion exists abnormally. Up to date this anomaly is known only in the Palaeacaroides.

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