

Taxonomic and Ecological Studies in the Family Parholaspidae (Acari, Mesostigmata) from Japan

(Part 2)

By

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(Communicated by Tadashige HABE)

In the second part of this paper, the author is going to deal with the genera *Parholaspulus* EVANS and *Proparholaspulus* ISHIKAWA.

Genus *Parholaspulus* EVANS

Parholaspulus EVANS, 1956, Proc. zool. Soc. London, 127: 373.

Dorsal shield provided with twenty-seven to thirty pair of simple setae. Pre-sternal shield composed of a single or more pair of small platelets. Sternal shield of female with three pair of simple setae. Epigynial shield not fused with ventri-anal shield. Ventri-anal shield provided with three or more pair of simple setae. Peritrematal shield fused with exopodal shield, and not fused with ventri-anal shield. Holoventral shield present in male. Epistome with various projections in addition to median extension. Chelicera and corniculus well developed. Leg I with or without claws. Femur IV with or without spur in female.

Type-species: *Parholaspulus alstoni* EVANS.

Key to the Species

1. Leg I provided with claws and pulvilli; ventri-anal shield with two to five pair of preanal setae. 2.
— Leg I lacking in claw and pulvillus; ventri-anal shield with three pair of preanal setae 7.
2. Ventri-anal shield with only two pair of preanal setae. *P. marinus* sp. nov.
— Ventri-anal shield with more than three pair of preanal setae. 3.
3. Dorsal shield with thirty pair of simple setae; D-series of dorsal setae much longer than distances between their respective bases.
. *P. communis* (ISHIKAWA).
— Dorsal shield with less than twenty-nine pair of simple setae; D-series of dorsal setae shorter than distances between their respective bases. 4.
4. Dorsal shield with twenty-seven pair of simple setae.

-*P. yakushimaensis* sp. nov.
- Dorsal shield with twenty-nine pair of simple setae.....5.
5. Ventri-anal shield with five pair of preanal setae.....*P. shigaensis* ISHIKAWA.
- Ventri-anal shield with three or four pair of preanal setae.....6.
6. Ventri-anal shield wider than long, and provided with four pair of preanal setae
.....*P. arboreus* sp. nov.
- Ventri-anal shield longer than wide, and provided with three pair of preanal setae
.....*P. extremiorientalis* sp. nov.
7. Movable digit of chelicera with two large teeth and more than ten small teeth...
.....*P. dentatus* ISHIKAWA.
- Movable digit of chelicera with two large teeth only, smaller teeth absent.....8.
8. Movable digit of chelicera much longer than corniculus; tarsus II without spine
apically*P. trifurcatus* (ISHIKAWA).
- Movable digit of chelicera nearly equal to corniculus in length; tarsus II with
stout spine9.
9. D-series of dorsal setae longer than distances between their respective bases;
extra-marginal setae of integument simple*P. ochraceus* (ISHIKAWA).
- D-series of dorsal setae shorter than distances between their respective bases;
extra-marginal setae of integument setose.....*P. alstoni* EVANS.

Parholaspulus marinus sp. nov.

[Japanese name: Nagisa-hokodani]

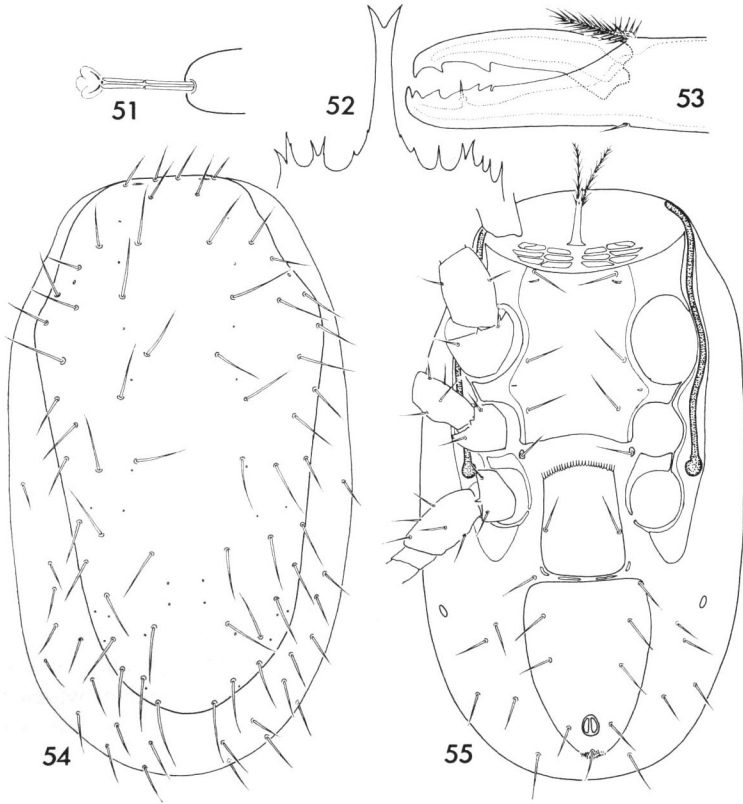
(Figs. 51-55)

Type-series. Holotype ♀ (NSMT-Ac 9301): Shiraishinohana (seashore), Matsuyama, Ehime Pref., 9-XII-1973, K. ISHIKAWA. Paratypes: 1 ♀, the same data as holotype; 1 ♀, the same place as holotype, 12-V-1978, Y. ISHIKAWA.

Female. Length of idiosoma av. 641 μ ; length of dorsal shield (three specimens): 590 μ , 605 μ and 623 μ ; width of dorsal shield at the level of coxae IV: av. 270 μ .

Dorsum. Dorsal shield entire, sclerotized and provided with twenty-eight pair of simple setae. Dorsal seta D1 longer than seta M1. Extra-marginal setae simple. The distribution of setae and pores and the ornamentations are as shown in Fig. 54. Length of setae: verticals 35 μ , M1 31 μ , D2 43 μ , D3 61 μ , D5 53 μ , D6 60 μ , D9 55 μ .

Venter. Tritosternum well developed, with a pair of elongate plumose laciniae. Presternal shields composed of six pair of platelets, which are sometimes partially coalesced. Sternal shield sclerotized, and partially fused with endopodal shields, bearing three pair of simple setae and two pair of pores. Metasternal shields small, bearing a pair of simple setae and pores. Epigynial shield nearly rectangular, slightly longer than wide, its posterior margin being rounded, and provided with a pair of simple setae. Two pair of small platelets located on the integument posterior to epigynial shield. Ventri-anal shield subtriangular, longer than wide, bearing two pair (sometimes three pair) of preanal and three perianal setae. Metapodal shields present.



Figs. 51–55. *Parholaspulus marinus* sp. nov., female. — 51. Claws of leg I. — 52. Epistome. — 53. Chelicera. — 54. Dorsum. — 55. Venter.

Stigmata located at a position antero-lateral to coxae IV. Peritremes extending to the level of coxae I.

Gnathosoma. Epistome with distally divided extension at middle and several short spines on either side. Pedipalp five-segmented; palpal apotele with three tines, two of which are distally spatulate. Fixed digit of chelicera provided with four teeth and a pilus dentilis; dorsal seta on chelicera simple. Movable digit of chelicera ($113\ \mu$) as long as corniculus, bearing two teeth.

Legs. Tarsus I with vestigial claws and pulvilli; tarsus I ($90\ \mu$) approximately twice as long as tibia I. Tarsi II to IV each with well developed claws and pulvilli; tarsus II with a pair of stout spines at the apical part.

Male. Unknown.

Remarks. Of the members of *Parholaspulus*, only the present species and *P. paradichaetes* have two preanal setae on the ventri-anal shield. This new species is easily distinguished from *P. paradichaetes* by having only twenty-eight pair of simple

setae instead of thirty-one pair of long simple dorsal setae. It is worth noting that this is the only species that lives in the shells of oysters and clam worms in the intertidal zone.

Parholaspulus communis (ISHIKAWA)

[Japanese name: Nami-hokodani]

(Figs. 56–62)

Neoparholaspulus communis ISHIKAWA, 1966, Rept. Res. Matsuyama Shinonome Junior Coll., 2: 7;
ISHIKAWA, 1969, Bull. Natn. Sci. Mus., Tokyo, 12: 60.

Additional specimens examined. Hokkaido — 1 ♀, Futatsu, Hokkaido, 16-X-1962, G. IMADATÉ; 2 ♀♀, ex litter of *Abies sachalinensis* (Fr. SCHMIDT) MASTERS, Sapporo, Hokkaido, 20-V-1968, T. FUJIKAWA. Honshu — 1 ♀, Mt. Shiga, Nagano Pref., 23-VIII-1968, K. ISHIKAWA. Shikoku — 3 ♀♀, Omogo Valley, Ehime Pref., 4-VII-1966, K. I.; 2 ♀♀, Matsuyama City, 28-I-1967, K. I.; 2 ♀♀, Kyôgamori, Matsuyama, 19-V-1967, K. I.; 2 ♀♀, Mt. Nishiakaishi, Ehime Pref., 28-V-1969, K. I.

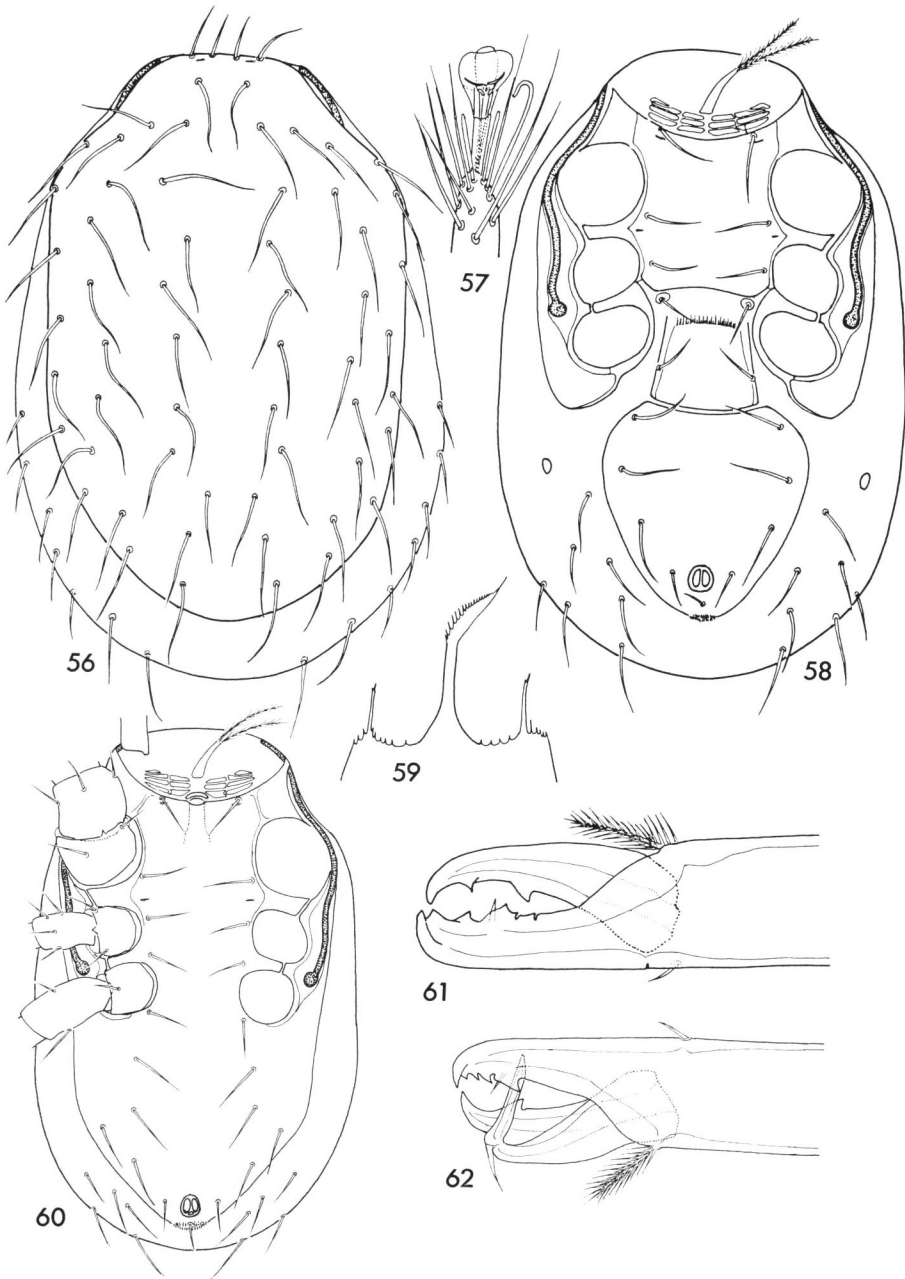
Female. Length of idiosoma: av. 650 μ ; length of dorsal shield 537–670 μ , av. 596 μ ; width of dorsal shield at the level of coxae IV 326–390 μ , av. 364 μ .

Dorsum. Dorsal shield entire, weakly reticulated especially in the posterior area, with the anterior margin slightly rounded. Dorsal shield provided with thirty pair of simple setae; dorsal setae of D-series much longer than distances between their mutual bases; seta D1 shorter than M1. Length of setae: verticals 38 μ , D2 85 μ , D3·D4 92 μ , D5 82 μ , D10 87 μ , D11 95 μ and humerals 92 μ .

Venter. Tritosternum bipartite; plumose laciniae longer than tritosternal base. Presternal shields fragmented, consisting of seven pair of platelets. Sternal shield reticulated and partially fused with endopodal shield, bearing three pair of simple setae and two pair of pores. Metasternal shield free, located behind the posterolateral angles of sternal shield. Epigynial shield subtruncated posteriorly, the base being wider than the anterior margin, and with a pair of simple setae. Ventri-anal shield ornamented with a network of punctate lines; three pair of preanal setae present. Metapodal shields distinct and located lateral to second preanals. Stigmata located near the anterolateral angles of coxae IV. Peritremes extending to coxae I; peritrematal shield partially fused with exopodal shield.

Gnathosoma. Epistome with distally divided median extension and with several short spines and elongate lateral projections on either side of the median projection. Pedipalp five-segmented; palpal apotele with three tines, two of which are spatulate distally. Movable digit of chelicera (102 μ) nearly similar in length to corniculus and with two teeth. Dorsal seta on fixed digit simple.

Legs. Tarsus I with vestigial claws and pulvilli; tarsi II to IV each with well developed claws and pulvilli; tarsus II with a series of strong spines at the apical part.



Figs. 56–62. *Parholaspulus communis* (ISHIKAWA) (56–59, 61, female; 60, 62, male). — 56. Dorsum. — 57. Claws of leg I. — 58, 60. Venter. — 59. Epistome. — 61–62. Chelicera.

Tarsus I (637 μ) much longer than tibia I (400 μ). Length of leg I 568 μ , II 515 μ , III 397 μ and IV 605 μ .

Male. Length of idiosoma: av. 594 μ ; length of dorsal shield 534–583 μ , av. 561 μ ; width of dorsal shield at the level of coxae IV 312–376 μ , av. 347 μ .

Chaetotaxy and ornamentation of dorsal shield essentially similar to those of female. Genital orifice located on the anterior margin of sternal shield. Holovertral shield provided with nine pair of simple setae and three perianal setae. Fixed digit of chelicera with two large teeth and two small teeth, while movable digit with a single tooth and a sperm transfer organ. Femur II with a stout thumb-like apophysis; a small spine located on genu II, tibia II and tarsus II. Length of leg I 583 μ , II 526 μ , III 410 μ and IV 608 μ .

Known distribution. Hokkaido, Honshu, Shikoku (type-locality: Matsuyama).

Remarks. This species was originally described by the present author (1966) from Matsuyama. After a re-examination, he came to the conclusion that the genus *Neoparholaspulus* is mainly characterized by the fusion of epigynial shield with the ventri-anal and that this species should be transferred to the genus *Parholaspulus*, together with *N. trifurcatus* ISHIKAWA and *N. ochraceus* ISHIKAWA.

This species is found in litter and decaying wood in various districts of Japan, but it has not yet been recorded in Kyushu.

Parholaspulus yakushimaensis sp. nov.

[Japanese name: Yakushima-hokodani]

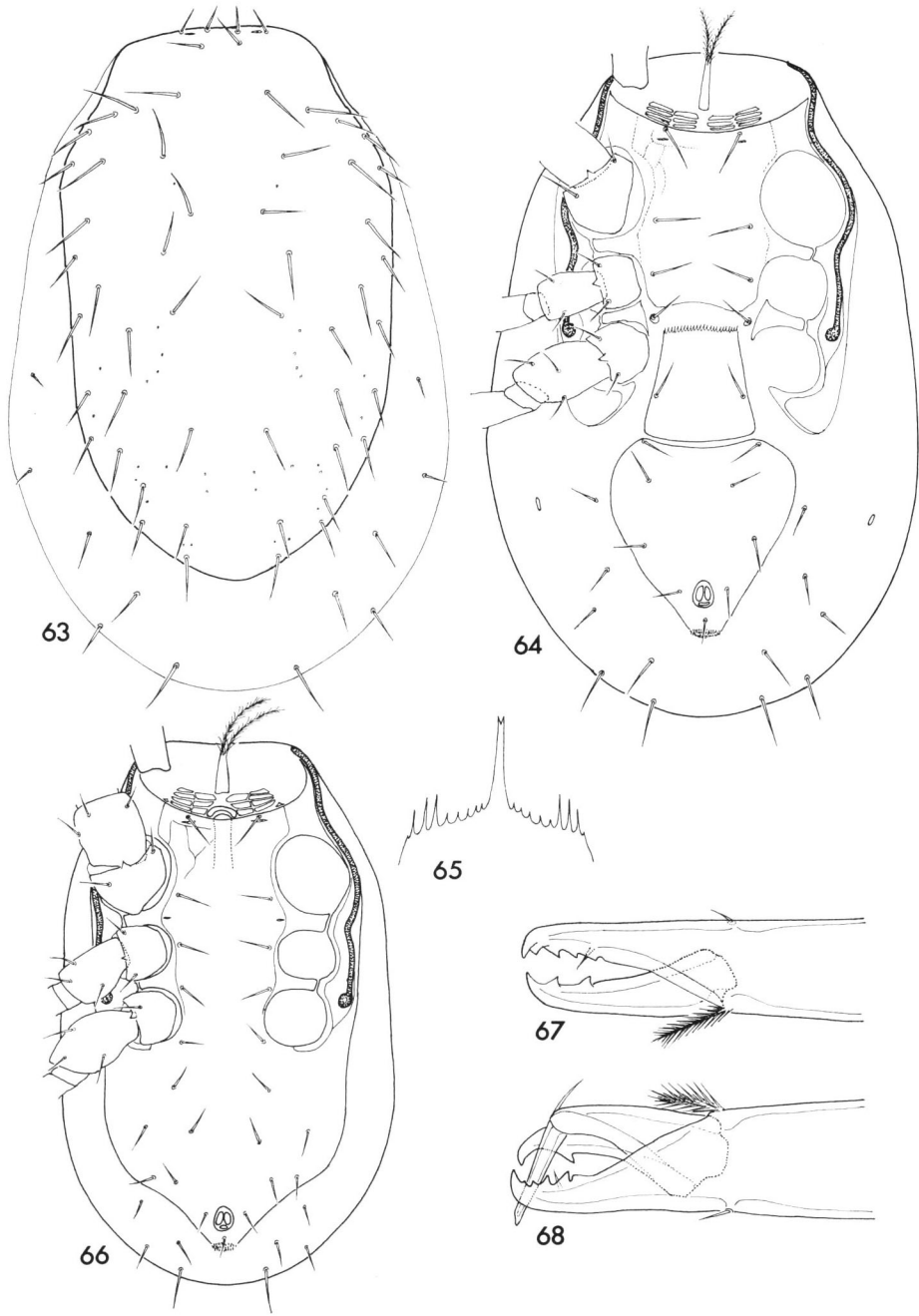
(Figs. 63–68)

Type-series. Holotype ♀ (NSMT-Ac 9302) and allotype ♂: Miyanoura, Yakushima Is., Kagoshima Pref., 10–VI–1968, R. NAGANO. Paratypes: 2 ♀♀, the same data as holotype; 5 ♀♀, 1 ♂, Miyanoura, Yakushima Is., 12–II–1969, R. NAGANO.

Female. Length of idiosoma: av. 669 μ ; length of dorsal shield 570–597 μ , av. 578 μ ; width of dorsal shield at the level of coxae IV 293–348 μ , av. 304 μ .

Dorsum. Dorsal shield weakly reticulated, its anterior margin being slightly rounded. Dorsal shield with twenty-seven pair of simple setae; seta D1 approximately as long as seta M1. Extra-marginal setae simple. Length of setae: verticals 33 μ , M1 28 μ , D2 41 μ , D3 51 μ , D4 49 μ , D5 31 μ , D10 41 μ , D11 56 μ and humerals 54 μ .

Venter. Tritosternum with a pair of strongly pilose laciniae considerably longer than tritosternal base. Presternal shields fragmented into seven pair of narrow platelets. Sternal shield reticulated, and partially fused with endopodal shield; three pair of simple setae and two pair of pores present. Metasternal shield free, with a pair of simple setae and pores. Epigynial shield slightly rounded posteriorly, with the base considerably wider than the anterior margin; a pair of simple setae present. Ventri-anal shield subtriangular, with slightly concave anterior margin; surface with reticulated pattern and three pair of preanal and three perianal setae. Metapodal shields narrow,



Figs. 63–68. *Parholaspulus yakushimaensis* sp. nov. (63–64, 65, 67, female; 66, 68, male). —
63. Dorsum. — 64, 66. Venter. — 65. Epistome. — 67–68. Chelicera.

and located at a level between preanal setae I and II. Peritremes extending anteriorly beyond coxae I; peritrematal shield partially fused with exopodal shield, extending for a short distance beyond coxae IV.

Gnathosoma. Epistome with distally divided median extension and with several short spines and sharply pointed lateral projections. Pedipalp five-segmented; palpal apotele with three tines, two of which are distally spatulate. Fixed digit of chelicera provided with four teeth and a pilus dentilis, while movable digit ($95\ \mu$) bidentate and nearly as long as corniculus.

Legs. Tarsus I with vestigial claws and pulvilli; tarsi II to IV with well developed claws and pulvilli; tarsus II with a pair of strong spines on the distal portion. Tarsus I ($172\ \mu$) approximately twice as long as tibia I ($90\ \mu$). Length of leg I $569\ \mu$, II $487\ \mu$, III $419\ \mu$ and IV $605\ \mu$.

Male. Length of idiosoma 580, $583\ \mu$; dorsal shield 535, $550\ \mu$; width of dorsal shield at the level of coxae IV 276, $325\ \mu$.

Dorsal chaetotaxy and ornamentation similar to those of female. Genital orifice located on the anterior margin of sternal shield. Holoventral shield bearing ten pair of simple setae and three perianal ones. Fixed digit of chelicera chelate-dentate, movable digit with a single large tooth and sperm transfer organ. Femur II with a stout thumb-like apophysis, a small spine situated on genu II, tibia II as well as tarsus II. Length of leg I $537\ \mu$, II $472\ \mu$, III $330\ \mu$ and IV $529\ \mu$.

Remarks. The present species can be readily separated from *P. spinitectus* PETROVA, 1968, from the Soviet Far East. The Soviet species possesses the following characteristics: dorsal shield with twenty-eight pair of simple setae; dorsal seta D1 longer than seta M1; tarsus II with two pair of strong spines. It is interesting that the present species has so far been collected only from Yakushima Island off southern Kyushu.

Parholaspulus shigaensis ISHIKAWA

[Japanese name: Shiga-hokodani]

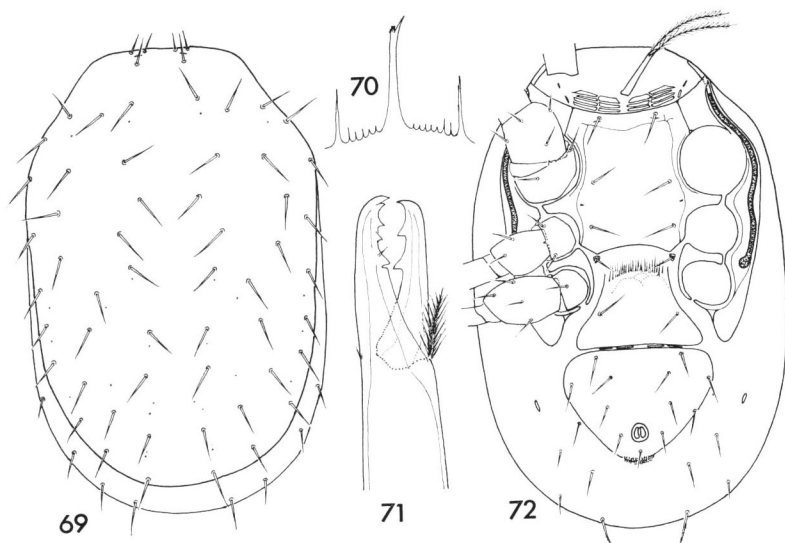
(Figs. 69–72)

Parholaspulus shigaensis ISHIKAWA, 1969, Bull. Natn. Sci. Mus., Tokyo, 12: 56.

Additional specimens examined. Honshu — 1 ♀, ex litter of *Abies mariesii* MASTERS, Mt. Shiga, Nagano Pref., 3–VI–1968, 2 ♀♀, 24–VIII–1968, K. ISHIKAWA. Shikoku — 21 ♀♀, ex litter of *Abies firma* and *Tsuga sieboldii*, Mt. Omogo, Ehime Pref., 15–VIII–1970, K. I.; 1 ♀, ex litter of *Abies veitchii* var. *shikokiana*, Mt. Ishizuchi, Ehime Pref., 15–VIII–1970, K. I.

Female. Length of idiosoma: av. $705\ \mu$; length of dorsal shield: 624 – $688\ \mu$, av. $667\ \mu$; width of dorsal shield at the level of coxae IV: 407 – $447\ \mu$, av. $428\ \mu$.

Dorsum. Dorsal shield entire, weakly reticulated and provided with twenty-nine pair of simple setae. Anterior margin of dorsal shield slightly rounded. The



Figs. 69–72. *Parholaspulus shigaensis* ISHIKAWA, female. — 69. Dorsum. — 70. Epistome. — 71. Chelicera. — 72. Venter.

distribution of setae and pores is as shown in Fig. 69. Vertical seta M1 as long as seta D1. Length of setae: verticals, M1 17 μ , D2 36 μ , D3 45 μ , D4 44 μ , D5 31 μ , D11 44 μ and humerals 54 μ .

Venter. Tritosternum normal for the genus. Presternal shield fragmented into fourteen narrow platelets. Sternal shield weakly reticulated and fused with endopodal shield, bearing three pair of simple setae and two pair of pores. Epigynial shield large, truncated posteriorly, with its base wider than the anterior margin, and with a pair of genital setae. Ventri-anal shield subtriangular and with five (sometimes four) pair of preanal setae; all the setae simple. Metapodal shields narrow, and located lateral to ventri-anal shield. Stigmata located near the anterior angles of coxae IV. Peritremes extending beyond coxae II and peritrematal shields partially fused with exopodal shields.

Gnathosoma. Epistome with median extension and with several short spines and elongated lateral projections on either side of the median projection. Palpal apotele on palpal tarsus provided with three tines, two of which are spatulate distally. Fixed digit of chelicera bears four teeth and a pilus dentilis, while movable digit (98 μ) bidentate and slightly shorter than corniculus (105 μ).

Legs. Tarsus I with small claws; tarsi II to IV with well developed claws and pulvilli; tarsus II with a pair of stout spines and a spur apically. Tarsus I (207 μ) approximately twice as long as tibia I (107 μ). Length of leg I 735 μ , II 540 μ , III 429 μ and IV 637 μ .

Male. Unknown.

Known distribution. Honshu (type-locality: Mt. Shiga), Shikoku.

Remarks. This species was first collected by the author on Mt. Shiga, Nagano Pref., Central Japan.

***Parholaspulus arboreus* sp. nov.**

[Japanese name: Kinobori-hokodani]

(Figs. 73–78)

Type-series. Holotype ♀ (NSMT–Ac 9303) and allotype ♂: Jiyoshi-tôge, Ehime Pref., 3–XI–1968, K. ISHIKAWA. Paratypes: Honshu — 1 ♀, ex *Abies mariesii*, Mt. Ontake, Nagano Pref., 18–VIII–1968, Z. YAMASHITA; 5 ♀♀, 2 ♂♂, ex *Pinus densiflora*, Iwai, Ibaraki Pref., 30–VI–1977, N. ENDA. Shikoku — 3 ♀♀, 2 ♂♂, the same data as holotype; 3 ♀♀, Mt. Higashiakaishi, Ehime Pref., 27–X–1968, M. TSURUHARA. Ogasawara Islands — 4 ♀♀, 3 ♂♂, ex *Pinus luchuensis* MAYR, Hahajima Is., 30–VI–1977, N. ENDA.

Female. Length of idiosoma av. 645 μ , dorsal shield 562–609 μ , av. 587 μ ; width at the level of coxae IV 310–338 μ , av. 323 μ .

Dorsum. Dorsal shield entire, weakly reticulated in the posterior portion and provided with twenty-nine pair of simple setae. D-series of dorsal setae shorter than distances between their mutual bases; seta D1 shorter than seta M1. Distribution of setae and pores as shown in Fig. 73. Length of setae: verticals 31 μ , M1 37 μ , D2 49 μ , D3 51 μ , D4 47 μ , D5 38 μ , D6 46 μ , D9 44 μ and humerals 60 μ .

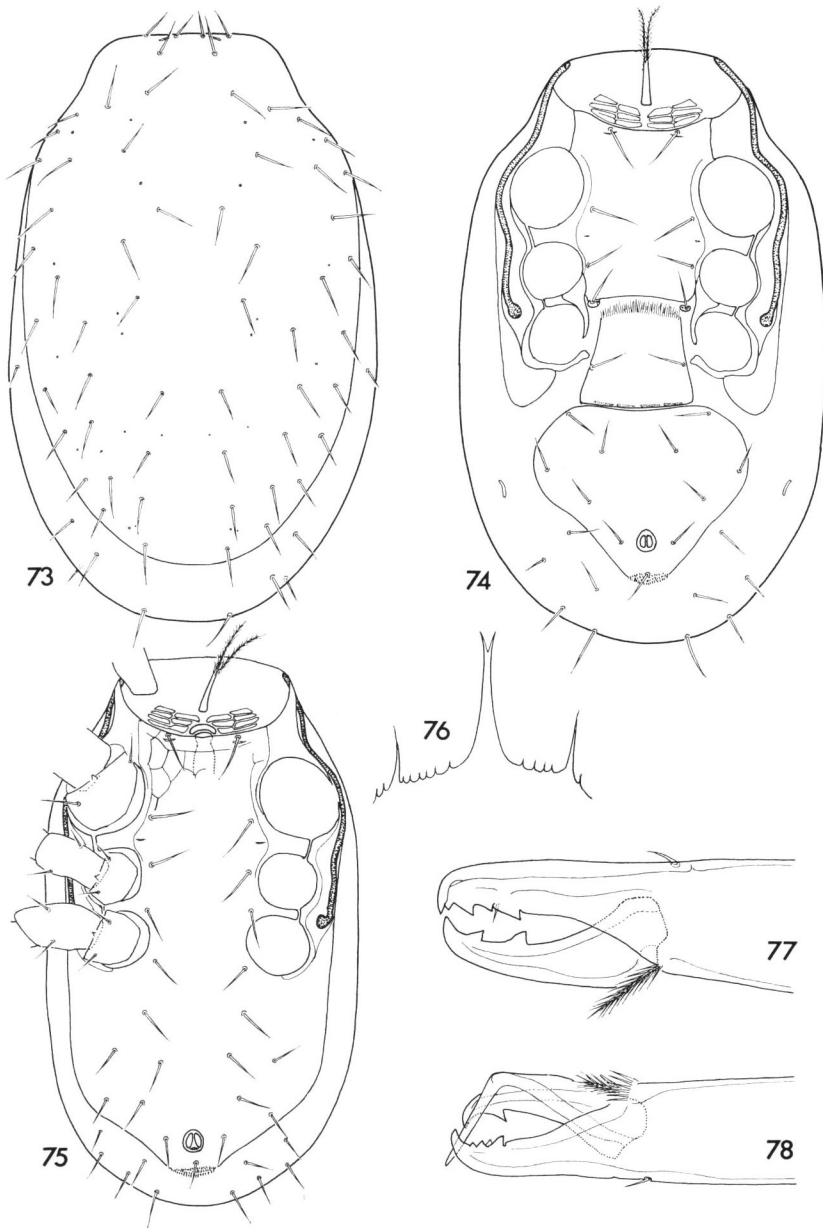
Venter. Tritosternum with a pair of pilose laciniae and narrow base. Presternal shield composed of seven pair of platelets. Sternal shield fused with endopodal shields, and bearing three pair of simple setae and two pair of pores. Metasternal shields small, and with a pair of simple setae and pores. Epigynial shield provided with a pair of simple setae, its base being wider than the anterior margin. Ventri-anal shield sub-triangular, and with four pair of preanal setae and three perianal setae. Metapodal shields narrow and elongate. Stigmata located at a position antero-lateral to coxae IV. Peritremes extending to the level of coxae I.

Gnathosoma. Epistome with elongate median extension and several short spines and a single elongate lateral projection on either side. Pedipalp five-segmented; palpal apotele with three tines. Fixed digit of chelicera provided with four teeth and a pilus dentilis, while movable digit (77 μ) has two teeth and is slightly shorter than corniculus (82 μ).

Legs. Tarsus I with vestigial claws and pulvilli; tarsus I (167 μ) approximately twice as long as tibia I. Tarsi II to IV with well developed claws and pulvilli. Tarsus II with a pair of stout spines. Length of leg I 527 μ , II 506 μ , III 420 μ and IV 623 μ .

Male. Length of idiosoma: av. 570 μ , length of dorsal shield 519–568 μ , av. 548 μ ; width of dorsal shield at the level of coxae IV 288–330 μ , av. 310 μ .

Dorsal chaetotaxy and ornamentation similar to those of female. Genital orifice situated on the anterior margin of sternal shield. Holovenral shield with ten pair of



Figs. 73-78. *Parholaspulus arboreus* sp. nov. (73-74, 76-77, female; 75, 78, male). — 73. Dorsum. — 74-75. Venter. — 76. Epistome. — 77-78. Chelicera.

simple setae and three perianal setae. Fixed digit of chelicera provided with four teeth, and movable digit with a single tooth and sperm transfer organ. Femur II with a stout thumb-like apophysis; genu, tibia and tarsus of leg II spurred. Length of leg I 525 μ , II 430 μ , III 337 μ and IV 452 μ .

Remarks. The present species is easily distinguished from *P. vulgaris* PETROVA, 1967, from the Soviet Far East, by having four pair of preanal setae instead of three. The shape of the ventri-anal shield and the number of preanal setae are also considered as important characters. The present species has been collected from the surface of pine trees and spruce trees, and also from the litter layer in various districts.

Parholaspulus extremiorientalis sp. nov.

[Japanese name: Mike-hokodani]

(Figs. 79–82)

Type-series. Holotype ♀ (NSMT–Ac 9304): ex litter of *Abies firma* and *Tsuga sieboldii*, Omogo Valley, Ehime Pref., 28–X–1966, K. ISHIKAWA. Paratypes: Honshu — 2 ♀♀, Hirosaki, Aomori Pref., 6–VIII–1968, S. CHIBA; 3 ♀♀, ex litter of *Fagus crenata*, Ashû, Kyôto Pref., 2–VII–1963, H. WATANABE. Shikoku — 2 ♀♀, the same data as holotype; 5 ♀♀, Ôzu, Ehime Pref., 14–VI–1969, K. I.; 3 ♀♀, Omogo Valley, Ehime Pref., 26–V–1969, M. SAKAI.

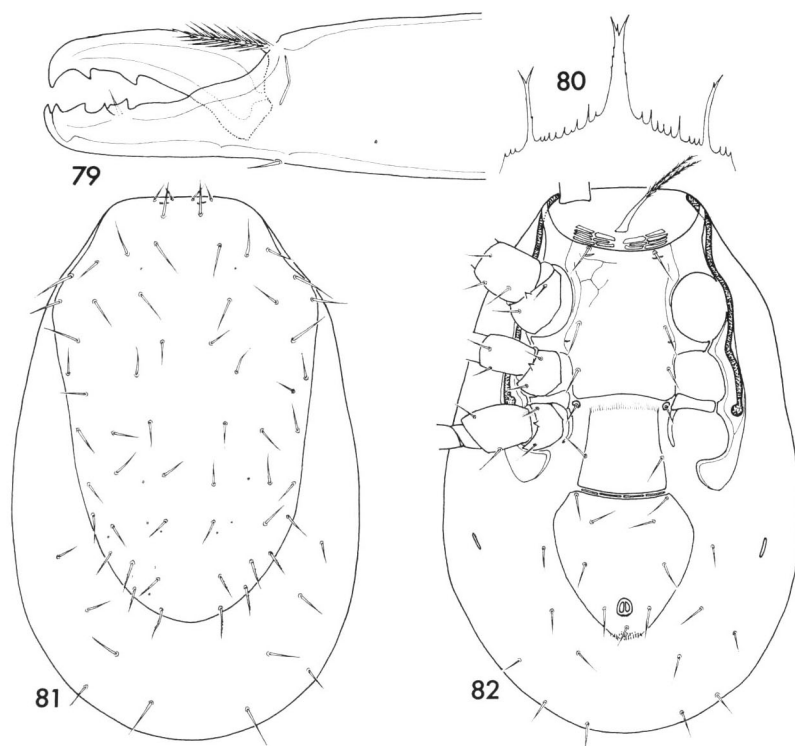
Female. Length of idiosoma av. 668 μ ; dorsal shield 550–635 μ , av. 595 μ ; width at the level of coxae IV 286–385 μ , av. 341 μ .

Dorsum. Dorsal shield entire, sclerotized and provided with twenty-nine pair of simple setae. D-series of dorsal setae shorter than distances between their mutual bases; seta D1 considerably shorter than seta M1. The distribution of setae and pores is as shown in Fig. 81. Length of setae: verticals 18 μ , M1 31 μ , D2 49 μ , D3 49 μ , D4 49 μ , D5 46 μ , D9 49 μ and humerals 69 μ .

Venter. Tritosternum with a pair of pilose laciniae and narrow base. Presternal shield fragmented into seven pair of narrow platelets. Sternal shield with reticulated anterior area, and partially fused with endopodal shield, bearing three pair of simple setae and two pair of pores. Metasternal shield small, separated from sternal and endopodal shields. Epigynial shield wedge-shaped, and with a pair of genital setae. Ventri-anal shield subtriangular, with slightly concave anterior margin and three pair of preanal and three perianal setae. Metapodal shields narrow and elongate. Stigmata located between coxae III and IV and lateral to them. Peritremes extending to coxae I; peritrematal shield partially fused with exopodal shields.

Gnathosoma. Epistome with elongate median extension and several short spines on either side. Pedipalp five-segmented; palpal apotele with three tines. Fixed digit of chelicera with four teeth and a pilus dentilis, while movable digit (102 μ) is bidentate and as long as corniculus.

Legs. Tarsus I with vestigial claws and pulvilli; tarsus I (108 μ) approximately twice as long as tibia I. Tarsi II to IV with well developed claws and pulvilli. Tarsus



Figs. 79–82. *Parholaspulus extremiorientalis* sp. nov., female. — 79. Chelicera. — 80. Epistome. — 81. Dorsum. — 82. Venter.

II with a pair of stout spines. Length of leg I 740 μ , II 550 μ , III 458 μ and IV 660 μ .
Male. Unknown.

Remarks. The present species superficially resembles *Parholaspulus vulgaris* PETROVA, 1967, from the Soviet Far East, but the latter has the following characteristics: the dorsal setae D1 are much longer than setae M1; the dorsal setae D2 are particularly short.

***Parholaspulus multidentatus* sp. nov.**

[Japanese name: Nokoba-hokodani]

(Figs. 83–87)

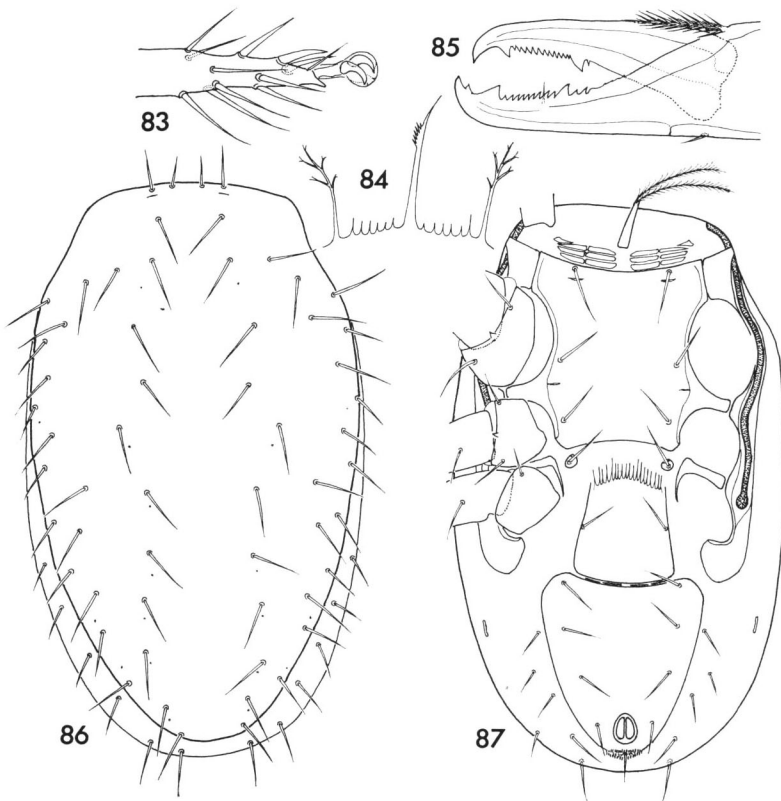
Type-series. Holotype ♀ (NSMT-Ac 9305): ex litter of *Quercus serrata* THUNB., Meiji-jingū, Tokyo, 1–XI–1975, J. AOKI. Paratypes: Honshu — 1 ♀, the same place as holotype, 18–XII–1975, J. AOKI.

Female. Length of idiosoma (two specimens): 445 μ , 495 μ ; length of dorsal

shield: 435 μ , 480 μ ; width of dorsal shield at the level of coxae IV: 240 μ , 265 μ .

Dorsum. Dorsal shield entire, sclerotized and provided with twenty-nine pair of simple setae. Dorsal seta D1 shorter than seta M1. Extra-marginal setae simple. The distribution of setae and pores is as shown in Fig. 86. Length of setae: verticals 28 μ , M1 35 μ , D2 40 μ , D3 43 μ , D5 37 μ , D6 40 μ and D9 33 μ .

Venter. Tritosternum well developed, with a pair of elongate pilose laciniae. Presternal shields composed of seven pair of platelets. Sternal shield sclerotized, and partially fused with endopodal shields, with three pair of simple setae and two pair of pores. Metasternal shields with a pair of simple setae and pores. Epigynial shield slightly rounded posteriorly, and provided with a pair of simple setae. Two pair of narrow platelets situated on the integument posterior to epigynial shield. Ventri-anal shield subtriangular, and bearing three pair of preanal and three perianal setae. Metapodal shield present. Stigmata located near the antero-lateral angles of coxae IV. Peritremes extending to coxae I; peritrematal shield partially fused with exopodal



Figs. 83–87. *Parholaspulus multidentatus* sp. nov., female. — 83. Tarsus II. — 84. Epistome. — 85. Chelicera. — 86. Dorsum. — 87. Venter.

shield and extending posteriorly to coxae IV.

Gnathosoma. Epistome with elongate median extension and several short spines on either side of the median extension and a single pair of elongate projections divided distally. Pedipalp five-segmented; palpal tarsus provided with three-tined palpal apotele. Fixed digit of chelicera with two large and twelve small teeth and a pilus dentilis, while movable digit ($123\ \mu$) has two large and thirteen small teeth and is longer than corniculus ($102\ \mu$).

Legs. Tarsus I without claws and pulvilli; tarsi II to IV each with well developed claws and pulvilli; tarsus I ($152\ \mu$) much longer than tibia I ($82\ \mu$). Tarsus II with a pair of strong spines on the dorsal side of distal part. Length of leg I $475\ \mu$, II $407\ \mu$, III $338\ \mu$ and IV $463\ \mu$.

Male. Unknown.

Remarks. The present species can be readily separated from *P. dentatus* ISHIKAWA, 1969. The latter species possesses the following characteristics: dorsal shield with thirty pair of simple setae; tarsus II lacking strong spine.

Parholaspulus dentatus ISHIKAWA

[Japanese name: Kobano-hokodani]

(Figs. 88–91)

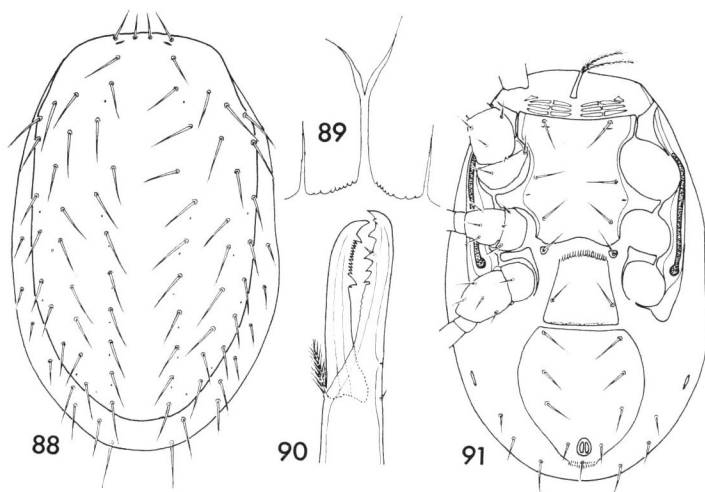
Parholaspulus dentatus ISHIKAWA, 1969, Bull. Natn. Sci. Mus., Tokyo, 12: 58.

Additional specimens examined. Hokkaido — 1 ♀, Akan, Hokkaido, 12–X–1962, G. IMADATÉ; 1 ♀, Mt. Shinkan, Hokkaido, 12–X–1962, G. IMADATÉ; etc. Honshu — 1 ♀, Otanomôsunô-taira, Mt. Shiga, Nagano Pref., K. ISHIKAWA; 2 ♀♀, Donzokono-koike, Mt. Shiga, 25–VIII–1968, K. I.; 1 ♀, Misumaike, Shiga Heights, 29–VIII–1968, K. I. Shikoku — 1 ♀, ex litter of bamboo, Higashino, Matsuyama City, 9–III–1966, K. ISHIKAWA; 2 ♀♀, Jôju, Mt. Ishizuchi, Ehime Pref., 8–VI–1969, K. I.; 3 ♀♀, ex litter of *Sciadopitys verticillata* SIEBOLD et ZUCCARINI, Omogo Valley, Ehime Pref., 6–VIII–1969, K. I.; 1 ♀, ex litter of *Betula ermani*, Tsuchigoya, Mt. Ishizuchi, Ehime Pref., 8–VIII–1969, K. I.; 1 ♀, Okinoshima Is., Kôchi Pref., 16–II–1969, N. TANIGAWA. Kyushu — 3 ♀♀, 1 ♂, Ônami-ike, Mt. Kirishima, 28–VII–1971, K. I.

Female. Length of idiosoma: av. $470\ \mu$; length of dorsal shield: $407\text{--}472\ \mu$, av. $435\ \mu$; width of dorsal shield at the level of coxae IV: $258\text{--}295\ \mu$, av. $270\ \mu$.

Dorsum. Dorsal shield entire and weakly reticulated, bearing thirty pair of simple setae. The distribution of setae and pores and the relative length of setae are as shown in Fig. 88. Seta D1 as long as M1. Lateral membranous portion on each side with thirteen simple setae. Length of setae: verticals, M1 $21\ \mu$, D2 $79\ \mu$, D3 $101\ \mu$, D4 $113\ \mu$, D5 $92\ \mu$, D10 $98\ \mu$, D11 $113\ \mu$ and humerals $101\ \mu$.

Venter. Tritosternum bipartite; plumose laciniae longer than tritosternal base. Presternal shield fragmented into seven pair of narrow platelets. Sternal shield reticulated and provided with three pair of simple setae and two pair of pores. Meta-



Figs. 88–91. *Parholaspulus dentatus* ISHIKAWA, female. — 88. Dorsum. — 89. Epistome. — 90. Chelicera. — 91. Venter.

sternal shield free, oval in outline and with simple long seta and pore. Epigynial shield extending beyond the level of posterior margin of coxae IV, and with a pair of simple setae. Ventri-anal shield provided with three pair of preanal setae. Metapodal shield small and located at a level between preanal setae II and III. Stigmata situated between coxae III and IV and lateral to them; peritreme extending to coxae II. Peritrematal shield partially fused with exopodal shield, extending for a short distance beyond coxa IV.

Gnathosoma. Epistome with a distally divided median extension and with several short spines and elongated lateral projections on either side of the median projection. Pedipalp five-segmented; palpal apotele with three tines, two of which are distally spatulate. Fixed digit of chelicera provided with five large and five small teeth and a pilus dentilis, while movable digit has two large and fourteen small internal teeth. Corniculus ($100\ \mu$) long, though shorter than movable digit of chelicera ($143\ \mu$).

Legs. Tarsus I without claws and pulvilli; tarsi II to IV each with well developed claws and pulvilli; tarsus II without apical stout spines. Tarsus I ($142\ \mu$) approximately twice as long as tibia I ($75\ \mu$). Length of leg I $531\ \mu$, II $364\ \mu$, III $287\ \mu$ and IV $418\ \mu$.

Male. Unknown.

Known distribution. Hokkaido, Honshu (type-locality: Mt. Shiga), Shikoku.

Remarks. This species was originally described by the present author (1969) from Mt. Shiga. It is not abundant anywhere in its known range, though rather widely distributed in Japan.

Parholaspulus trifurcatus (ISHIKAWA)

[Japanese name: Mitsumata-hokodani]

(Figs. 92–98)

Neoparholaspulus trifurcatus ISHIKAWA, 1966, Rept. Res. Matsuyama Shinonome Junior Coll., 2: 104; ISHIKAWA, 1969, Bull. Natn. Sci. Mus., Tokyo, 12: 60.

Additional specimens examined. Hokkaido — 3 ♀♀, Mt. Asahidake, 10–VII–1970, K. ISHIKAWA. Honshu — 1 ♀, Sandankyō, Hiroshima Pref., 12–X–1968, K. I. Shikoku — 1 ♂ (herewith designated as allotype), ex litter of *Abies homolepis* SIEB. et ZUCC., Tsuchigoya, Mt. Ishizuchi, 17–VIII–1970, K. I.; 1 ♀, Sugitate, Matsuyama, 15–XII–1966, K. I.; 8 ♀♀, 2 ♂♂, Tsuchigoya, Mt. Ishizuchi, 6–VIII–1969, K. I.; 3 ♀♀, ex humus of *Abies veitchii shikokiana* KUSAKA, Ninomori, Mt. Ishizuchi, 7–VIII–1969, K. I.; 2 ♀♀, ex humus of *Tsuga sieboldii* CARR., Mt. Omogo, 9–VIII–1969, K. I. Kyushu — 4 ♀♀, Amakusa, Kumamoto Pref., 9–V–1968, M. TANAKA.

Female. Length of idiosoma: av. 565 μ ; length of dorsal shield 441–536 μ , av. 496 μ ; width of dorsal shield at the level of coxae IV 253–318 μ , av. 285 μ .

Dorsum. Dorsal shield entire, its anterior margin being nearly truncated. Dorsal shield provided with thirty pair of simple setae. Dorsal setae of D-series considerably smaller than distances between their mutual bases; seta D1 shorter than seta M1. Extra-marginal setae simple. Length of setae: verticals 26 μ , M1 33 μ , D2 44 μ , D3 54 μ , D5 44 μ , D11 46 μ and humerals 77 μ .

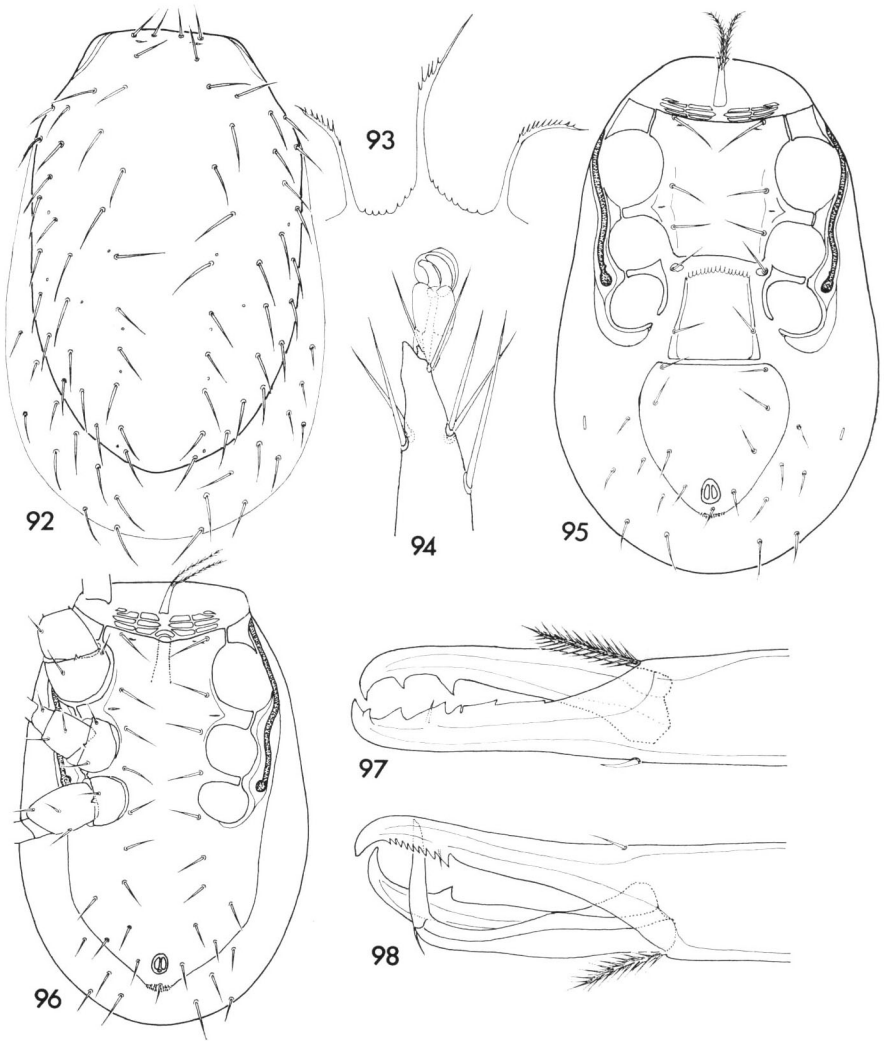
Venter. Tritosternum with strong pilose laciniae longer than tritosternal base. Presternal shield fragmented into seven pair of narrow platelets. Sternal shield reticulated, punctate and partially fused with endopodal shield; three pair of simple setae and two pair of pores present. Epigynial shield nearly truncated posteriorly, and with a pair of simple setae. Ventri-anal shield weakly ornamented with a network of punctate lines, and with three pair of preanal setae. Metapodal shield elongate, located lateral to second preanal setae. Stigmata located at a level between coxae III and IV and lateral to them. Peritremes extending beyond coxae II; peritrematal shield partially fused with exopodal shield.

Gnathosoma. Epistome with a median and lateral extensions divided distally, and with several short spines on either side of the median projection. Pedipalp five-segmented; palpal tarsus provided with three-tined palpal apotele. Movable digit of chelicera (174 μ) bidentate and longer than corniculus (133 μ). Fixed digit of chelicera with five teeth and a pilus dentilis as shown in Fig. 97.

Legs. Tarsus I without claws and pulvilli; tarsi II to IV each with well developed claws and pulvilli; tarsus II without spine. Tarsus I (154 μ) approximately twice as long as tibia I (77 μ). Length of leg I 563 μ , II 426 μ , III 315 μ and IV 477 μ .

Male. Length of idiosoma: av. 455 μ ; length of dorsal shield 415–448 μ , av. 430 μ ; width of dorsal shield at the level of coxae IV 230–265 μ , av. 245 μ .

Chaetotaxy and ornamentation of dorsal shield essentially similar to those of female. Genital orifice situated on the anterior margin of sternal portion. Holoven-



Figs. 92–98. *Parholaspulus trifurcatus* (ISHIKAWA) (92–95, 97, female; 96, 98, male). — 92. Dorsum. — 93. Epistome. — 94. Tarsus II. — 95–96. Venter. — 97–98. Chelicera.

tral shield provided with ten pair of simple setae and three perianal setae. Fixed digit of chelicera with nine teeth, while movable digit with a single tooth and a sperm transfer organ. Femur II with a stout thumb-like apophysis; a stout small spine-like process present on genu and tibia; tarsus II without stout spine. Length of leg I 548 μ , II 411 μ , III 300 μ and IV 452 μ .

Known distribution. Hokkaido, Honshu, Shikoku (type-locality: Matsuyama), Kyushu.

Remarks. This species has been collected from various districts of Japan, though it was originally described by the author (1966) from Matsuyama, Ehime Prefecture.

***Parholaspulus ochraceus* (ISHIKAWA)**

[Japanese name: Ameiro-hokodani]

(Figs. 1-6, 99-104)

Neoparholaspulus ochraceus ISHIKAWA, 1966, Rept. Res. Matsuyama Shinonome Junior Coll., 2: 103.

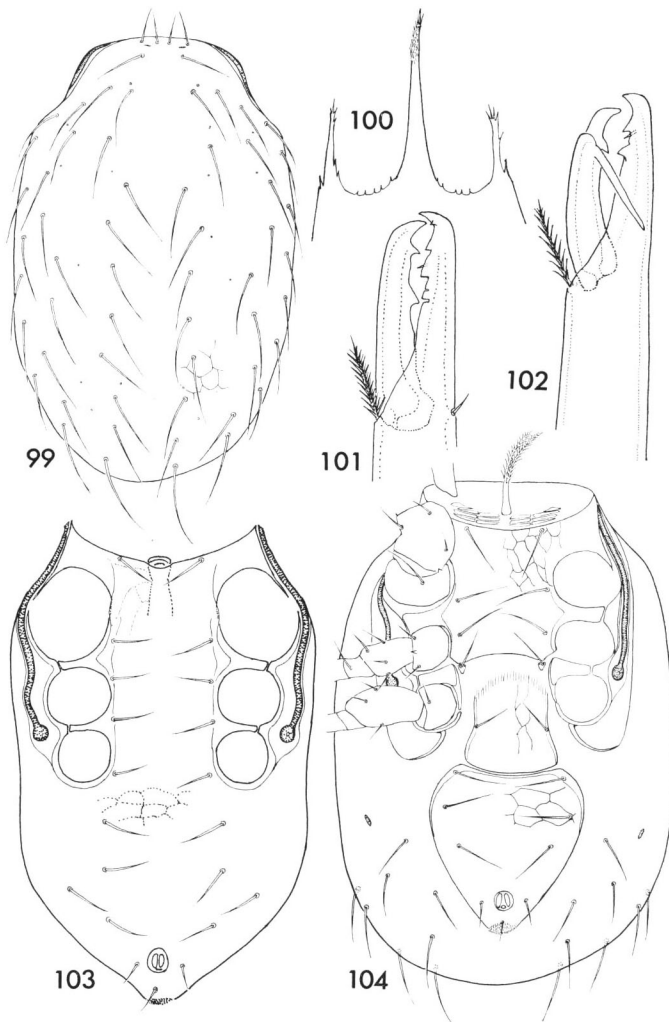
Additional specimens examined. Hokkaido — 2 ♀♀, Futatsu, Hokkaido, 16-X-1962, G. IMADATÉ; 3 ♀♀, Akan, Hokkaido, 17-X-1962, G. IMADATÉ; 4 ♀♀, Ishikari, Hokkaido, 13-VIII-1968, T. FUJIKAWA; 5 ♀♀, 1 ♂, ex litter of *Betula ermani*, Mt. Asahidake, Hokkaido, 11-VII-1970, K. ISHIKAWA; etc. Honshu — 10 ♀♀, 2 ♂♂, Sandan-kyô Valley, Hiroshima Pref., 12-X-1968, K. I.; 3 ♀♀, ex litter of *Sciadopitys verticillata*, Goza, Goza-misaki, Mie Pref., 28-II-1969, K. I.; 2 ♀♀, Midoro, Kyoto Pref., 16-X-1967, K. I.; 2 ♀♀, Mt. Hakusan, Gifu Pref., 19-V-1967, M. TANAKA; 10 ♀♀, 2 ♂♂, Otanomôsunô-taira, Mt. Shiga, 19-X-1967, 5 ♀♀, 3-VI-1968, K. I.; 2 ♀♀, Kusatsu, Gunma Pref., 23-VIII-1968, K. I.; 3 ♀♀, Mt. Hakkôda, Aomori Pref., 8-VIII-1968, S. CHIBA. Shikoku — 1 ♀, ex litter of mixed forest, Sugitate, Matsuyama City, 15-XII-1966, 3 ♀♀, 1 ♂, 27-V-1967, K. I.; 7 ♀♀, ex litter of *Abies firma* SIEBOLD et ZUCCARINI, and *Tsuga sieboldii*, Omogo Valley, Ehime Pref., 4-VII-1966, K. I.; 2 ♀♀, 1 ♂, ex litter of *Fagus crenata*, Jôju, Mt. Ishizuchi, Ehime Pref., 8-VI-1969, K. I.; 3 ♀♀, Mt. Kanpûzan, Ehime Pref., 4-V-1969, K. OKUDA; 2 ♀♀, Nyûgawa, Ehime Pref., 10-XII-1967, Y. ISHIKAWA; 1 ♀, 1 ♂, ex litter of *Castanopsis cuspidata* (THUNBERG) SCHOTTKY, Yuyama, Matsuyama, 24-III-1969, M. IKI; 2 ♀♀, ex litter of *Camellia japonica*, Cape Ashizuri-misaki, Kôchi Pref., 2-III-1969, Y. TAN; 2 ♀♀, Kôchi City, 24-X-1968, K. I. Kyushu — 3 ♀♀, 1 ♂, Cape Sata-misaki, Kagoshima Pref., 7-IV-1970, K. I. Ryukyus — 2 ♀♀, Kametsu, Tokunoshima Is., Kagoshima Pref., 15-IV-1969, S. TOKUTOMI; 2 ♀♀, Miyanouura, Yakushima Is., 12-II-1969, R. NAGANO.

Female. Length of idiosoma: av. 882 μ ; length of dorsal shield 603-841 μ , av. 707 μ ; width of dorsal shield at the level of coxae IV 376-550 μ , av. 475 μ .

Dorsum. Dorsal shield weakly reticulated, especially in the posterior area, its anterior margin being nearly truncated. Dorsal shield provided with thirty pair of simple setae. Dorsal setae of D-series longer than distances between their mutual bases; seta D1 considerably shorter than seta M1. Extra-marginal setae simple. Length of setae: verticals 51 μ , M1 64 μ , D2 80 μ , D3 115 μ , D4 118 μ , D5 103 μ , D6 121 μ , D11 122 μ and humerals 118 μ .

Venter. Tritosternum bipartite, plumose laciniae longer than tritosternal base. Presternal shields fragmented into twelve narrow platelets flanking the tritosternal base. Sternal shield reticulated and punctate, and partially fused with endopodal shields; three pair of simple setae and two pair of pores present. Metasternal shield

nearly circular in outline, bearing a pair of simple setae and pores. Epigynial shield gently rounded posteriorly, wider at base than at anterior margin, and with a pair of simple setae. Ventri-anal shield subtriangular, the anterior margin being slightly concave; surface with reticulated pattern, bearing three pair of preanal setae and three perianal ones. Metapodal shield distinct and located lateral to the second preanal setae. Stigmata situated at a level between coxae III and IV and lateral to them. Peritremes extending anteriorly beyond coxae I; peritrematal shield partially fused with exopodal shields.



Figs. 99–104. *Parholaspulus ochraceus* (ISHIKAWA) (99–101, 104, female; 102–103, male). — 99. Dorsum. — 100. Epistome. — 101–102. Chelicera. — 103–104. Venter.

Gnathosoma. Epistome with elongate median extension, and with several short spines on either side of the median projection and a single pair of elongate lateral projections. Pedipalp five-segmented; palpal apotele with three tines, two of which are distally spatulate. Fixed digit of chelicera provided with five teeth, while movable digit ($190\ \mu$) is bidentate and as long as corniculus.

Legs. Tarsus I without claws and pulvilli; tarsi II to IV each with well developed claws and pulvilli; tarsus II with a series of strong spines at the distal portion. Tarsus I ($236\ \mu$) much longer than tibia I ($145\ \mu$). Length of leg I $861\ \mu$, II $735\ \mu$, III $638\ \mu$ and IV $889\ \mu$.

Male. Length of idiosoma: av. $745\ \mu$; length of dorsal shield 558 – $830\ \mu$, av. $689\ \mu$; width of dorsal shield at the level of coxae IV 341 – $579\ \mu$, av. $442\ \mu$.

Dorsal chaetotaxy and ornamentation similar to those of female. Genital orifice situated on the anterior margin of sternal shield. Holoventral shield with nine pair of simple setae and three perianal setae. Fixed digit of chelicera chelate-dentate, movable digit with a single tooth and a sperm transfer organ. Femur II with a stout thumb-like apophysis; a small spine situated on genu II, tibia II and tarsus II. Length of leg I $810\ \mu$, II $766\ \mu$, III $550\ \mu$ and IV $806\ \mu$.

Known distribution. Hokkaido, Honshu, Shikoku (type-locality: Matsuyama) and Kyushu.

Remarks. This species, originally described by the author (1966) from Matsuyama, is one of the commonest mites and is widely distributed in Japan.

Parholaspulus alstoni EVANS

[Japanese name: Alston-hokodani]

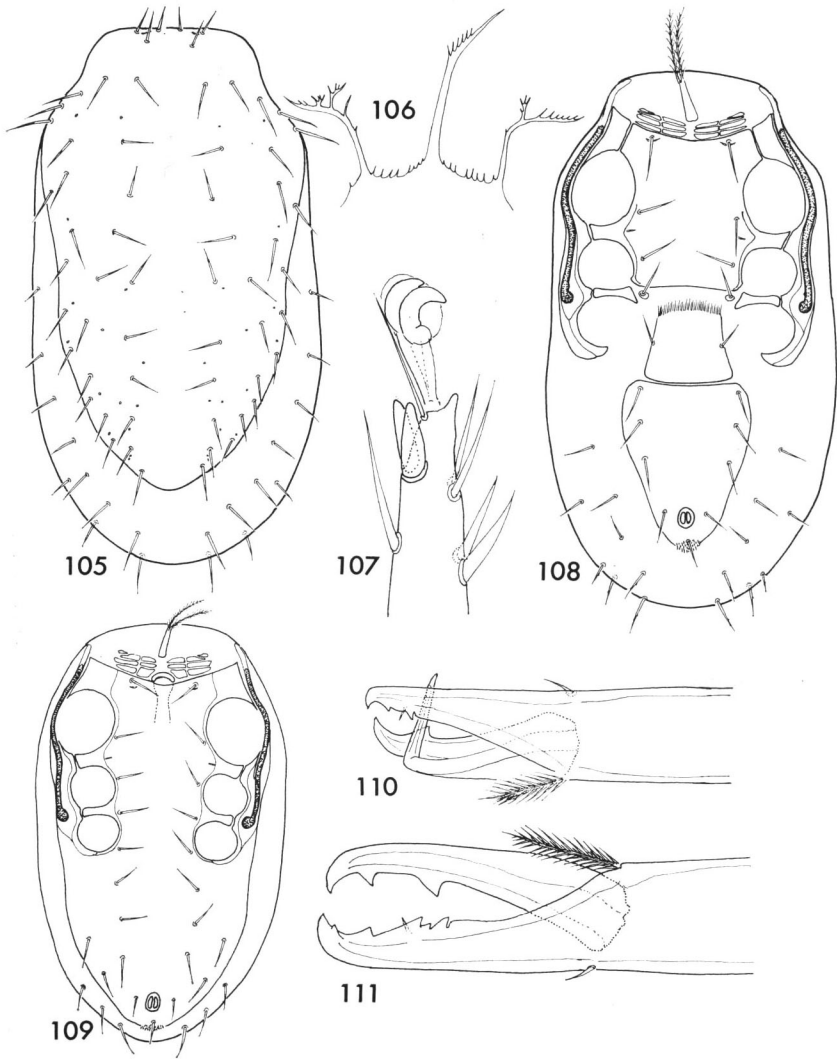
(Figs. 105–111)

Parholaspulus alstoni EVANS, 1956, Proc. zool. Soc. London, **127**: 374; KRANTZ, 1960, Acarologia, **2**: 417.

Specimens examined. Honshu — 1 ♀, Setoda, Hiroshima Pref., 24–V–1968, S. KAWAMOTO. Shikoku — 2 ♀♀, Mishô, Minamiuwa, Ehime Pref., 8–II–1969, T. WATANABE; 1 ♀, Iwayaji, Kamiukena, Ehime Pref., 1–VI–1969, M. SAKAI; 1 ♀, Tsuchigoya, Mt. Ishizuchi, 6–VIII–1969, K. ISHIKAWA; 1 ♀, 1 ♂, ex persimmon orchard, Kuwabara, Matsuyama City, 26–II–1966, 1 ♀, 31–XII–1968, K. I. Ryukyus — 2 ♀♀, 1 ♂, Mabumi, Okinawa Is., 13–VII–1969, K. I.; 2 ♀♀, Komi, Iriomote Is., 17–VII–1969, K. I.

Female. Length of idiosoma av. $580\ \mu$; length of dorsal shield 440 – $547\ \mu$, av. $496\ \mu$; width of dorsal shield at the level of coxae IV 235 – $287\ \mu$, av. $256\ \mu$.

Dorsum. Dorsal shield entire, its anterior margin being nearly truncated. Dorsal shield provided with thirty pair of simple setae. Dorsal setae of D-series considerably shorter than distances between their mutual bases; seta D1 slightly shorter than seta M1. Posterior setae of the extra-marginal series setose. Length of setae:



Figs. 105–111. *Parholaspulus alstoni* EVANS (105–108, 111, female; 109–110, male). — 105. Dorsum. — 106. Epistome. — 107. Tarsus II. — 108–109. Venter. — 110–111. Chelicera.

verticals $23\ \mu$, M1 $26\ \mu$, D2 $41\ \mu$, D3 $44\ \mu$, D4 $44\ \mu$, D5 $40\ \mu$, D11 $39\ \mu$ and humerals $46\ \mu$.

Venter. Tritosternum with a pair of strong pilose laciniae and narrow base. Presternal shields fragmented into twelve platelets which flank the tritosternal base. Sternal shield reticulated, punctate and partially fused with endopodal shield, bearing

three pair of simple setae and two pair of pores. Metasternal shield free and located behind the postero-lateral angles of sternal shield, bearing a pair of simple setae and pores. Epigynial shield weakly reticulated and gently rounded posteriorly, bearing a pair of simple setae. Ventri-anal shield weakly reticulated, punctate and with three pair of preanal setae. Metapodal shield conspicuous and narrow. Stigmata situated near the antero-lateral angles of coxae IV. Peritremes extending anteriorly beyond coxae II; peritrematal shield partially fused with exopodal shield and extending posteriorly to coxae IV.

Gnathosoma. Epistome with a median and a pair of lateral extensions divided distally. Pedipalp five-segmented; palpal tarsus provided with three-tined palpal apotele. Chelicera chelate-dentate; movable digit (121 μ) slightly longer than corniculus (113 μ).

Legs. Tarsus I without claws and pulvilli; tarsi II to IV with well developed claws and pulvilli; tarsus II with a pair of strong spines on the distal part. Tarsus I (141 μ) more than twice as long as tibia I (57 μ). Length of leg I 515 μ , II 396 μ , III 320 μ and IV 478 μ .

Male. Length of idiosoma av. 495 μ ; length of dorsal shield 411–504 μ , av. 450 μ ; width of dorsal shield at the level of coxae IV 225–271 μ , av. 243 μ .

The chaetotaxy and ornamentation of dorsal shield are basically the same as in the female. Genital orifice situated on the anterior margin of sternal shield. Holoventral shield with nine pair of simple setae and three perianal ones. Fixed digit of chelicera chelate-dentate, movable digit with a tooth and a sperm transfer organ. Femur, genu, tibia and tarsus of leg II spurred. Length of leg I 486 μ , II 430 μ , III 308 μ and IV 440 μ .

Known distribution. England (Royal Botanic Gardens, Kew); Philadelphia, U.S.A.; the eastern side of Black Sea; Sakhalin, U.S.S.R.; North Viet-Nam.

Remarks. This species was originally described by EVANS (1956) from the Royal Botanic Garden, Kew. It has been collected from Honshu, Shikoku and Ryukyus.

Genus *Proparholaspulus* ISHIKAWA, gen. nov.

Dorsal shield provided with more than thirty-one pair of simple setae. Presternal shield composed of a single pair of elongate platelets. Sternal shield of female fused with metasternal and endopodal shields, and with four pair of simple setae. Epigynial shield fused with ventri-anal shield. Ventral portion of geniti-ventri-anal shield with more than four pair of preanal and three perianal setae. Podal-peritrematal shield free from geniti-ventri-anal shield. Stigmata situated near the antero-lateral angles of coxae IV. Peritremes well developed; peritrematal shields fused with exopodal shields. Epistome with various projections in addition to median extension. Palpal apotele with three tines, two of which are distally spatulate. Tarsus I with or without small claws; tarsi II to IV with well developed claws and pulvilli.

Type-species: *Proparholaspulus suzukii* ISHIKAWA, sp. nov.

The most remarkable characters of the present genus are the fusion of the epigynial shield with the ventri-anal and the absence of the metasternal shield. It superficially resembles *Neoparholaspulus* KRANTZ, 1960, from Oregon, U.S.A., but the latter has the following characteristics: the metasternal shield is free from the sternal shield; the ventral portion of the geniti-ventri-anal shield is provided with three pair of preanal setae. Besides the type-species, *Neoparholaspulus pasohensis* ISHIKAWA (1976, p. 242, figs. 28–32) described from Malaysia, also belongs to this genus.

***Proparholaspulus suzukii* sp. nov.**

[Japanese name: Himedaruma-hokodani]

(Figs. 112–116)

Type-series. Holotype ♀ (NSMT–Ac 9306): ex litter of *Pinus densiflora*, Higashino, Matsuyama, Ehime Pref., 19–VI–1968, K. ISHIKAWA. Paratypes: Hokkaido — 1 ♀, Futatsu, Ashoro, Hokkaido, 16–X–1962, G. IMADATÉ. Kyushu — 1 ♀, ex litter of *Fagus crenata*, Mt. Karakunidake, Miyazaki Pref., 25–VII–1971, K. I.; 1 ♀, ex litter of *Hydrangea paniculata*, Mt. Koshikidake, Miyazaki Pref., 26–VII–1971, K. I.

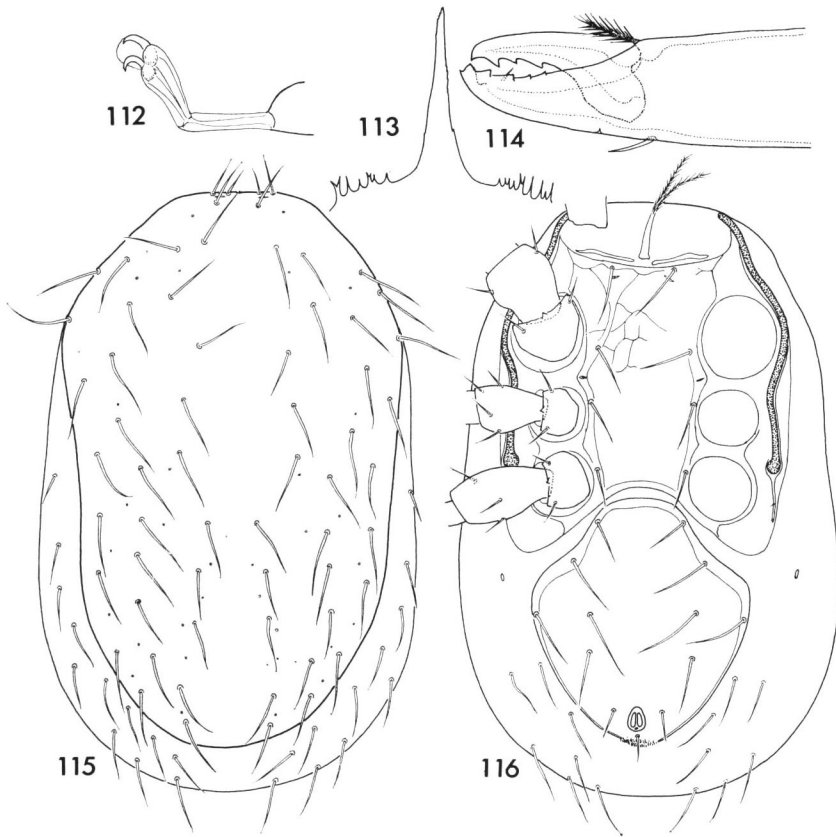
Female. Length of idiosoma ca. 643 μ ; length of dorsal shield (four specimens): 542 μ , 585 μ , 590 μ and 607 μ ; width of dorsal shield at the level of coxae IV: ca. 303 μ .

Dorsum. Dorsal shield entire, its anterior margin being nearly truncated. Dorsal shield provided with thirty-one pair of simple setae. Dorsal seta D1 shorter than seta M1. Extra-marginal setae simple. The distribution of setae and pores are as shown in Fig. 115. Length of setae: verticals 30 μ , M1 40 μ , D2 40 μ , D3 50 μ , D4 48 μ , D5 43 μ , D6 45 μ , D9 43 μ and humerals 50 μ .

Venter. Tritosternum with strong pilose laciniae longer than tritosternal base. A pair of narrow presternal shields present flanking tritosternum. Sternal shield reticulated, fused with metasternal and endopodal shields, bearing four pair of simple setae and two pair of pores. Epigynial shield completely fused with ventri-anal shield. Ventral portion of geniti-ventri-anal shield provided with four pair of long preanal setae. Metapodal shields conspicuous, located lateral to the first preanal setae. Stigmata situated near the antero-lateral angles of coxae IV. Peritremes well developed and extending to coxae I; peritrematal shields fused with exopodal shields, and with two pair of pit-like structures located posterior to stigma.

Gnathosoma. Epistome with elongate median extension and spinous lateral projections, and without lateral elongate projections. Pedipalp five-segmented; palpal apotele with three tines, two of which are distally spatulate. Fixed digit of chelicera with five teeth and a pilus dentilis; dorsal seta on chelicera simple. Movable digit of chelicera (68 μ) shorter than corniculus (77 μ), and with three teeth.

Legs. Tarsus I with small claws and pulvilli; tarsus I (85 μ) longer than tibia I (58 μ). Tarsi II to IV with well developed claws and pulvilli. Tarsus II with a pair of stout spines apically, and femur II with a thumb-like apophysis. Length of leg I 675 μ , II 543 μ , III 400 μ and IV 615 μ .



Figs. 112–116. *Proparholaspulus suzukii* gen. et sp. nov., female. — 112. Claws of leg I. — 113. Epistome. — 114. Chelicera. — 115. Dorsum. — 116. Venter.

Male. Unknown.

Remarks. The present species is easily distinguished from *P. pasohensis* ISHIKAWA from Malaysia, which has the following characteristics: dorsal shield provided with forty-four pair of simple setae; ventral portion of geniti-ventri-anal shield with five pair of preanal setae. The mite was found in various districts in Japan, but did not appear to be so common. The specific name *suzukii* was named after Dr. Seisho SUZUKI who kindly advised me during the course of this study.

(To be continued.)

