

## Four new *Poecilochirus* G. & R. Canestrini (Acarina: Parasitidae) species from Turkey

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### Summary

The present study of mites revealed four new species of *Poecilochirus* deutonymphs on mushroom compost from Turkey. They are as namely as: *P. hyatti* n. sp., *P. simplisetae* n.sp., *P. torbaliensis* n. sp. and *P. belkahvensis* n. sp. which are reported here under, with adequate figures.

**Key words:** *Poecilochirus hyatti* n. sp., *P. simplisetae* n.sp., *P. torbaliensis* n. sp., *P. belkahvensis* n. sp., mushroom compost.

**Anahtar sözcükler:** *Poecilochirus hyatti* n. sp., *P. simplisetae* n.sp., *P. torbaliensis* n. sp., *P. belkahvensis* n. sp., mantar kompostu.

### Introduction

The world acarofauna of cultivated mushrooms is extremely rich. Most of them cause important damage on mushroom and some are beneficial which prey the other mites and pests in the cropping houses. In the course of the study on

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mushroom pests in İzmir province of Turkey, some harmful and beneficial mite species were determined (Önder et al., 1995). From these mites, four species of the genus *Poecilochirus* (G. & R. Canestrini) (Acarina: Parasitidae) have been encountered. They are *P. hyatti* n. sp., *P. simplisetae* n. sp., *P. torbaliensis* n. sp. and *P. belkahvensis* n. sp.

Parasitic mites are common, widespread, dominant members of predator community in forest soil, dung compost and beach litter habitats. In many species that live in transitory habitats, the deutonymph is dispersal stage and often, the most frequently encountered instar (Warensch & Johnston, 1983). Some deutonymphs develop or found associated with mushroom compost. These *Poecilochirus* parasitic mites have been found in close association with other pyemotid mites in mushroom house which apparently feed on developing weed moulds.

Even though, only two faunistic reports are available on mushroom mites in Turkey (Toros & Çobanoğlu, 1985; Önder et al., 1995), not much work has been done on parasitic mites associated with mushroom compost.

## Material and Methods

Specimens were collected from mushroom growing houses in İzmir province during 1993-1994. In order to obtain the mites, compost, casing soil and mushroom samples were taken. Whenever the mites were found, they were collected, cleared and mounted in Hoyer's medium for study.

The type slides are deposited in the Acarology collections of Department of Agricultural Entomology, Agricultural College and Research Institute, Tamil Nadu Agricultural University, Coimbatore 641 003, India. The paratype slides are deposited in Ege University, Faculty of Agriculture, Plant Protection Department, İzmir, Turkey.

All measurements given in the descriptions are in micrometers. Terminology is based on Lindquist & Evans (1965).

## Results

### *Poecilochirus hyatti* n. sp.

(Figures 1-5)

### Description

#### Deutonymph

**Dorsum:** Idiosoma 578  $\mu$ m long and 336  $\mu$ m wide; body oval; slightly flat anteriorly. Dorsum divided into podonotal and opisthonotal shields with poorly

developed striations with a clear demarcation between them. Podonotal shield nearly conical, 315  $\mu\text{m}$  long, much broader posteriorly with 18 pairs of acicular setae. Four pairs of setae present on outer side of podonotal shield. Setae  $j_1$  thin, 81  $\mu\text{m}$  long, widely placed at the anterior margin of the body; all other setae are subequal, 81  $\mu\text{m}$  long; with 2 pairs of pores. The opisthonotal shield triangular 147  $\mu\text{m}$  long and slightly broader anteriorly than longer with only 9 pairs of simple smooth setae; the cuticle well striated with 15 pairs of setae.

**Venter:** Venter with one pair of presternal shield. Sternal shield 210  $\mu\text{m}$  long and 147  $\mu\text{m}$  wide with faint reticular pattern; with 4 pairs of unequal setae and 3 pairs of pores. The distance between setae  $St_1$ ,  $St_2$ ,  $St_3$  and  $St_4$  viz., 68, 89, 95 and 51  $\mu\text{m}$  respectively. Twelve pairs of simple, long ventral setae present on the opisthogastric integument; anal shield small, conical, 53  $\mu\text{m}$  long and 63  $\mu\text{m}$  wide with a pair of paranal and an adanal setae. Peritreme extend to the level of the base of coxae I. Tritosternum bifid and pectinate.

**Gnathosoma:** Gnathosoma long; well sclerotized, chelicerae with dentate blades and movable digits; fixed chela toothed, hypostomal base with 4 pairs of long setae. Epistome branched with serrate margins. Palp chaetotaxy: femora, 2; genua, 4; tibiae, 6 and tarsi, 18.

**Legs:** All the four legs long prominently with simple setae. Pretarsi of all legs ending with a pair of claws and an empodium distally. Legs I-IV measures 630, 472, 420 and 578  $\mu\text{m}$  long respectively. Leg chaetotaxy: coxae, 1-0-0-0; trochanter, 4-4-4-5; femora, 13-11-6-7; genua, 12-10-9-10; tibiae, 13-10-8-10 and tarsi, 30-16-15-18.

**Types:** The holotype female nymph marked on slide, Turkey, İzmir (Bornova: Belkahve), 5.X.1993 ex. Mushroom compost; Coll. N. Madanlar (No: 2). Eight paratype slides with nymphs and collection data same as holotype.

**Derivato nominis:** This species is named for Dr. K.H. Hyatt for his many contributions to acarology.

### **Diagnosis**

This species is distinguished from all other *Poecilochirus* nymphs by the presence of short smooth simple setae on the podonotal and opisthonotal shields (Wise et al., 1988). In addition, this species is distinctive by having comparatively less number of dorsal setae on opisthonotal shield and a short simple  $r_3$  setae on podonotal shield. Chelicerae conspicuous and prominent with 5-7 strong stout teeth present on the movable digit.

***Poecilochirus simplisetae* n. sp.**

(Figure 6-9)

**Description**

**Deutonymph**

**Dorsum:** Idiosoma 819  $\mu\text{m}$  long and 525  $\mu\text{m}$  wide; body oval, slightly narrow anteriorly. Dorsum divided into podonotal and opisthonotal shields with well developed striations. Podonotal shield nearly conical, 420  $\mu\text{m}$  long, 425  $\mu\text{m}$  wide, much broader posteriorly with 19 pairs of acicular setae. Setae  $j_1$  thin 105  $\mu\text{m}$  long inserted at the anterior margin of the shield; setae  $r_3$  is the longest setae of the podonotal shield, 147  $\mu\text{m}$  long. The opisthonotal shield triangular, 263  $\mu\text{m}$  long and slightly broader anteriorly than longer with 13 pairs of setae. The cuticle well striated with 21 pairs of setae.

**Venter:** Venter with a pair of presternal shield; sternal shield 270  $\mu\text{m}$  long and 179  $\mu\text{m}$  wide with reticulate ornamentation with three pairs of setae almost subequal 63  $\mu\text{m}$  long and two pairs of pores; 19 pairs of simple, long ventral setae present on the opisthogastric integument, anal shield small, 105  $\mu\text{m}$  long, 74  $\mu\text{m}$  wide, conical exhibiting wavy marking like punctations with a pair of paranal and an adanal setae. Peritreme extend to the level of the base of coxae I. Tritosternum bifid and pectinate.

**Gnathosoma:** Gnathosoma, 441  $\mu\text{m}$  long and 210  $\mu\text{m}$  wide; well sclerotized chelicerae with dentate blades and movable digits; fixed chela with 5 teeth, hypostome with 4 simple setae; setae  $C_2$  smaller than others. Epistome branched with smooth margin. Palp chaetotaxy: femora, 2; genua, 5; tibiae, 5 and tarsi, 22.

**Legs:** All the four legs are long with simple setae. Pretarsi of all legs ending with a pair of claws and an empodium distally. Legs I-IV measures 892, 630, 682 and 920  $\mu\text{m}$  long, respectively. Leg chaetotaxy: coxae, 2-2-0-0; trochanter, 6-5-5-8; femora, 12-10-6-7; genua, 12-11-9-9; tibiae, 14-9-8-9 and tarsi, 32-15-15-18.

**Types:** The holotype female nymph marked on slide, Turkey, İzmir (Seferihisar), 11.VIII.1993 ex. Mushroom compost; Coll. N.Madanlar (No. 6). Seven paratype slides with nymphs and collection data same as holotype.

**Diagnosis**

This new species resembles *Poecilochirus canestrini*, *P. necrophori* and *P. austroasiaticus* but can be distinguished by the sternal shield pattern, simple  $r_3$  setae on podonotal shield, the number and arrangement of dorsal setae and cheliceral teeth.

***Poecilochirus torbaliensis* n.sp.**

(Figures 10-13)

**Description**

**Deutonymph**

**Dorsum:** Idiosoma 893  $\mu\text{m}$  long and 578  $\mu\text{m}$  wide, oval, narrow anteriorly. The dorsal surface divided into propodosomal and opisthosomal shields with very poor patterns. Shields prominent and separated by a characteristic demarcation in the middle. Forty six pairs of smooth acicular setae except  $z_5$ ,  $r_3$ ,  $J_5$  and  $Z_5$  are pilose which arise from the dorsal surface. Most of the setae are long and thick. Podonotal shield almost conical, 368  $\mu\text{m}$  long, 558  $\mu\text{m}$  wide, slightly broader posteriorly than long with 15 pairs of setae. Setae  $j_1$  thick simple 105  $\mu\text{m}$  long inserted at the anterior margin of the shield; setae  $z_5$  and  $r_3$  are thick pilose and  $r_3$  is the longest setae of podonotal shield 157  $\mu\text{m}$ . The opisthonotal shield 284  $\mu\text{m}$  long and 400  $\mu\text{m}$  wide, almost triangular and a little broader anteriorly than long, 15 pairs of setae present and setae  $J_5$  and  $Z_5$  are thick, stout and pilose.

**Venter:** Sternal shield with fine reticulate pattern, 263  $\mu\text{m}$  long with four pairs of simple acicular setae with a pair of lyrifissure below the setae  $St_1$ ; 15 pairs of ventral setae present on the opisthogastric integument are simple and smooth; metapodal shield small and elongate; anal shield conical, 95  $\mu\text{m}$  long and 84  $\mu\text{m}$  wide exhibiting fine reticulate ornamentation with a pair of paranal and an adanal setae. Peritremes end near coxae I and tritosternum bifid and pectinate. Presternal shield not traceable.

**Gnathosoma:** Gnathosoma long; well sclerotized; chelicera with dentate blades in movable digits; fixed chela with four teeth; setae  $C_1$ ,  $C_2$ ,  $C_3$  and  $C_4$  simple long. Palp chaetotaxy: femora, 2; genua, 5; tibiae, 6 and tarsi, 18. Palp apotele three tined.

**Legs:** All the four legs are long and ending with a pair of claws and an empodium distally. Legs I to IV measures 1123, 735, 840 and 1260  $\mu\text{m}$  long respectively. Leg chaetotaxy: coxae, 2-1-0-0; trochanter, 6-3-5-5; femora, 12-11-7-7; genua, 12-11-9-10; tibiae, 14-9-7-10 and tarsi, 28-15-15-16.

**Types:** The holotype female nymph marked on slide, Turkey, İzmir (Torbali), 6.IV.1993, ex. Mushroom compost; Coll. N. Madanlar (No. 7). Seven paratype slides with nymphs and collection data same as holotype.

**Derivato nominis:** This species is named for the type-locality Torbali, Turkey.

**Diagnosis**

This species is distinguished from all other *Poecilochirus* nymphs by the number and arrangement of dorsal setae; the striation patterns of shields and fixed digit of chelicera with four small teeth.

***Poecilochirus belkahvensis* n. sp.**

(Figure 14-17)

**Description**

**Deutonymph**

**Dorsum:** Idiosoma 473  $\mu\text{m}$  long and 315  $\mu\text{m}$  wide; oval, narrow anteriorly. The dorsal surface divided into podonotal and opisthonotal shields with faint reticulate patterns. Shields prominent and separated by very characteristic wavy markings in the middle. Forty two pairs of smooth acicular setae except  $r_3$  and  $S_4$  are pilose which arise from the dorsal surface. Many setae are long and thick. Podonotal shield almost conical, 263  $\mu\text{m}$  long, 300  $\mu\text{m}$  wide, slightly broader at the base than long, with 19 pairs of setae. Setae  $j_3$ ,  $Z_3$  and  $r_3$  are longer, stout than others. Setae  $j_2$  59  $\mu\text{m}$  long while  $r_3$  is the longest 68  $\mu\text{m}$  of podonotal shield. The opisthonotal shield nearly triangular, 158  $\mu\text{m}$  long, 266  $\mu\text{m}$  wide, broader anteriorly than long. 18 pairs of setae present and  $J_5$ ,  $Z_5$  and  $S_3$  are stout and thick.

**Venter:** Sternal shield with reticulate ornamental pattern; 210  $\mu\text{m}$  long and 105  $\mu\text{m}$  wide with four pairs of acicular setae; with three pairs of pores; a pair of small presternal shields lie near coxae I. The distance between  $St_1$ ,  $St_2$ ,  $St_3$  and  $St_4$  are 86, 97, 81 and 54 respectively. Around 22 pairs of ventral setae present on the opisthogastric integument are simple and smooth; anal shield small and conical 54  $\mu\text{m}$  long exhibiting fine reticulate ornamentation with a pair of paranal and an adanal setae. Peritremes end near coxae I and tritosternum bifid and pectinate.

**Gnathosoma:** Gnathosoma 210  $\mu\text{m}$  long and 125  $\mu\text{m}$  wide; well sclerotized, chelicera with dentate blades and movable digits. Hypostome with 4 pairs of simple acicular setae. Palp chaetotaxy: femora, 2; genua, 5; tibiae, 6 and tarsi, 18. Palp apotele three tined. Epistome with central and lateral non-serrated elements.

**Legs:** All the four legs are long, predominantly with simple acicular and a few pilose setae. Pretarsi of all legs ending with a pair of claws and an empodium distally. Legs I-IV, 578, 368, 420 and 630  $\mu\text{m}$  long respectively. Leg chaetotaxy: coxae, 2-0-0-0; trochanter, 6-3-3-4; femora, 12-11-7-9; genua, 14-10-10-9; tibiae, 13-10-8-10 and tarsi, 32-15-15-15.

**Types:** The holotype female nymph marked on slide, Turkey, İzmir (Bornova: Belkahve), 5.X.1993 ex. Mushroom compost; Coll. N. Madanlar (No: 4). Eight paratype slides with nymphs and collection data same as holotype.

**Derivato nominis:** This species is named for the type-locality Belkahve, Turkey.

## Diagnosis

This new species resembles *Poecilochirus necrophori*, *P. canestrini* and *P. carabi* but can be differentiated by the shape, number and arrangement of dorsal setae and the striation patterns of idiosomal shield. It also differs from *P. austroasiaticus* by the uniformly darker sternal shield (Vitzthum, 1930; Baker & Wharton, 1952; Hyatt, 1980).

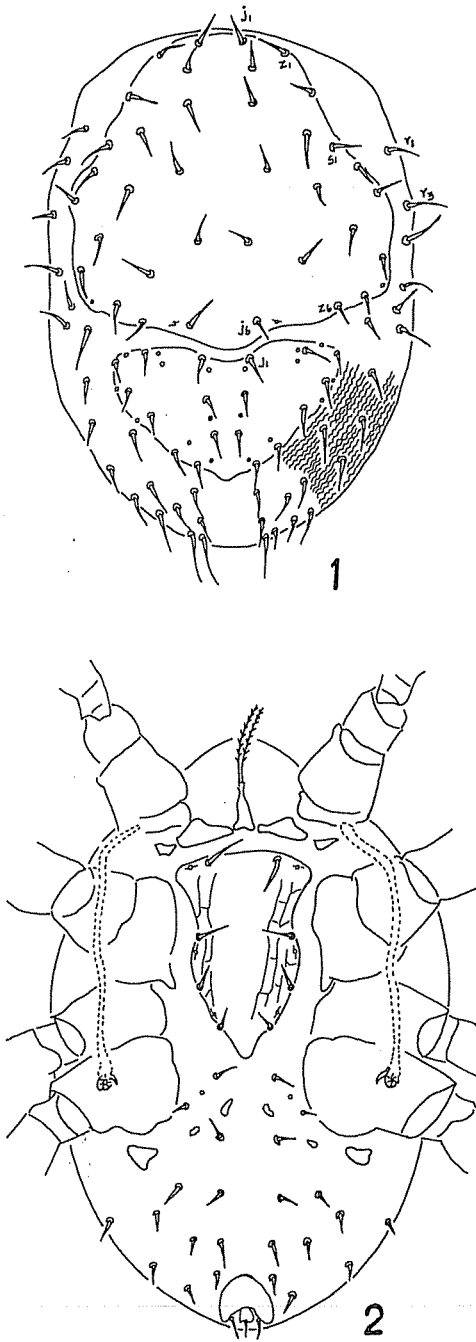
## Özet

### Türkiye'den dört yeni *Poecilochirus* G. & R. Canestrini (Acarina: Parasitidae) türü

Bu çalışmada, İzmir'de 1993-1994 yılları arasında kültür mantarlarında bulunan zararlıların saptanması sırasında rastlanan *Poecilochirus* cinsine bağlı dört yeni türün (*P. hyatti* n. sp., *P. simplisetae* n. sp., *P. torbaliensis* n. sp. ve *P. belkahvensis* n. sp.) orijinal tanıtımı yapılmıştır.

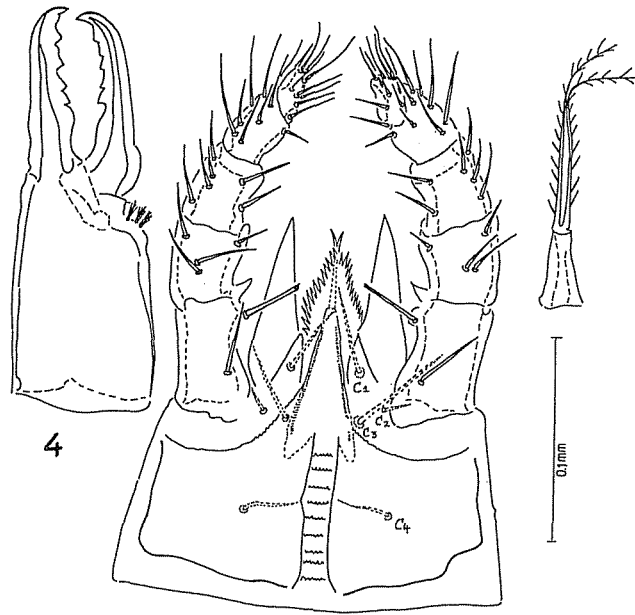
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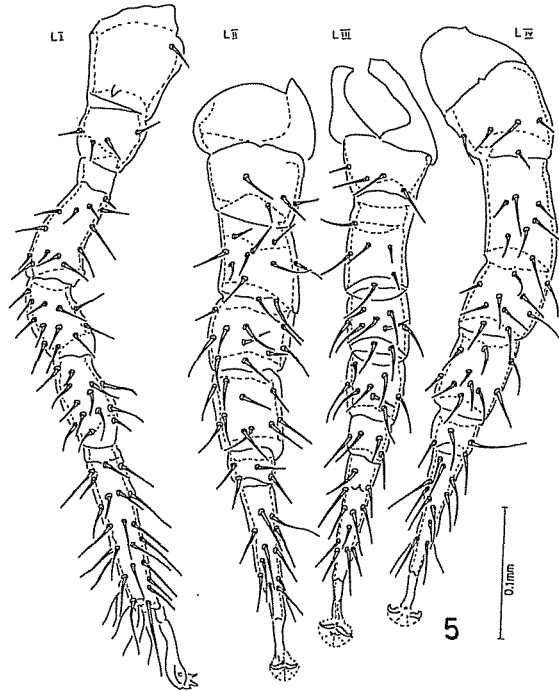


Figures 1-2. *Poecilochirus hyatti* n. sp. deutonymph, 1. Dorsal view, 2. Ventral view.

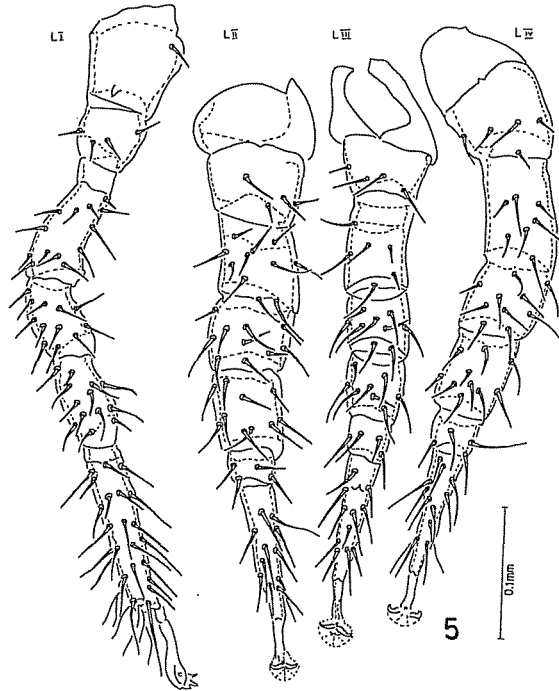




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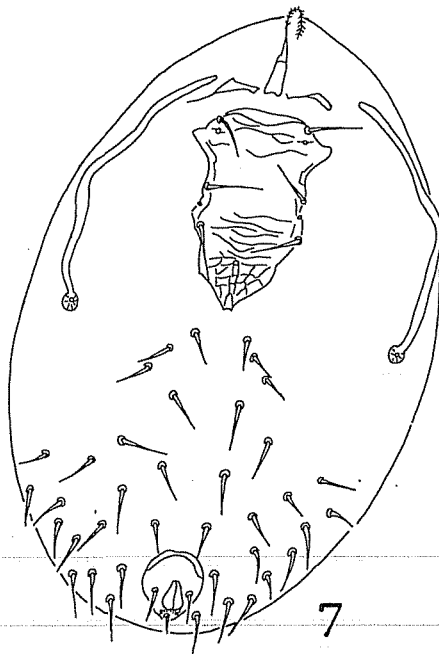
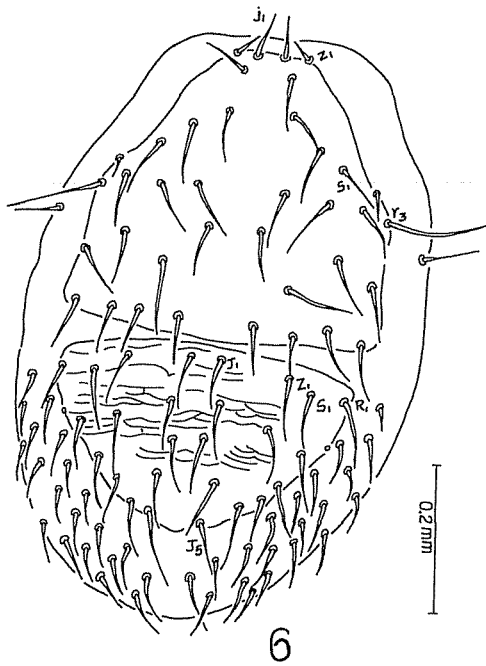


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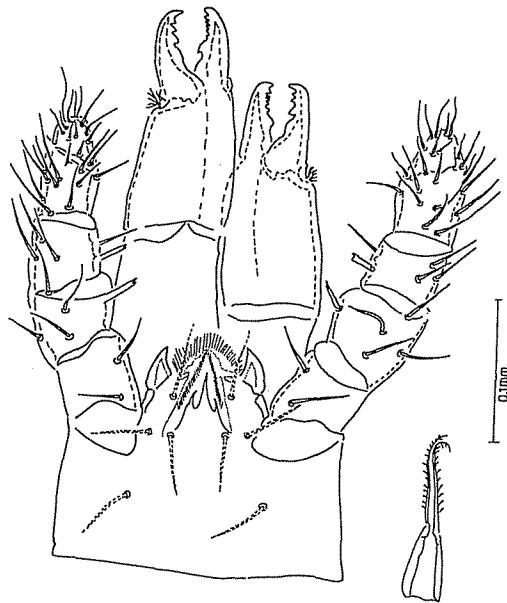


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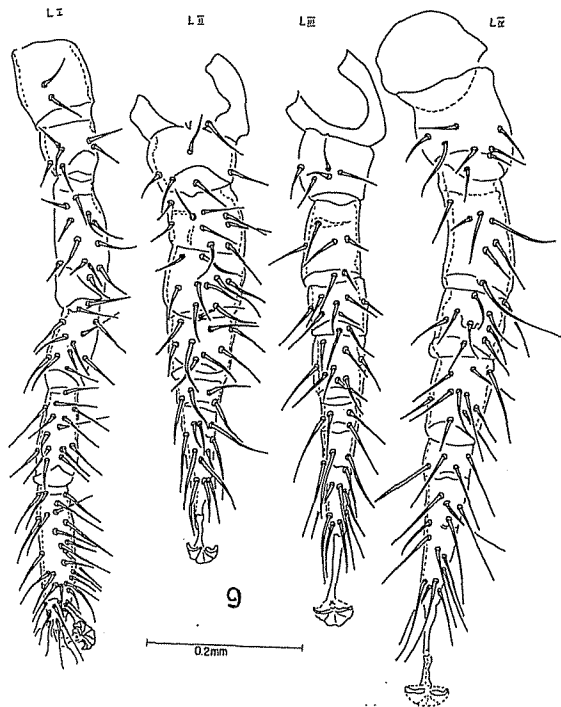
Figures 3-5. *Poecilochirus hyatti* n. sp. deutonymph, 3. Gnathosoma and tritosternum, 4. Chelicera-enlarged, 5. Legs I-IV.



Figures 6-7. *Poecilochirus simplisetae* n. sp. deutonymph,  
6. Dorsal view, 7. Ventral view.

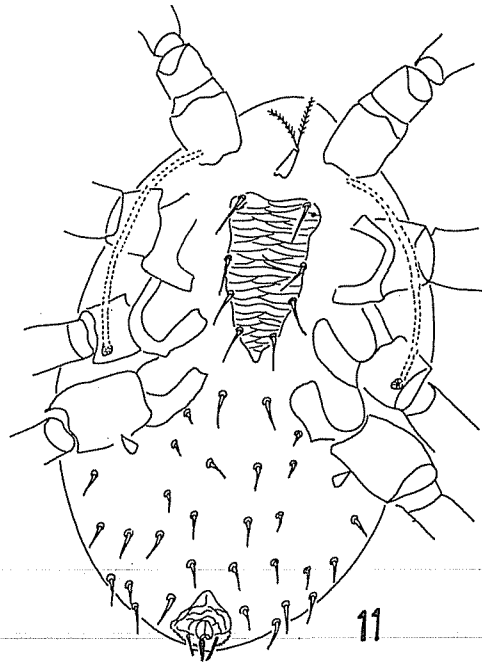
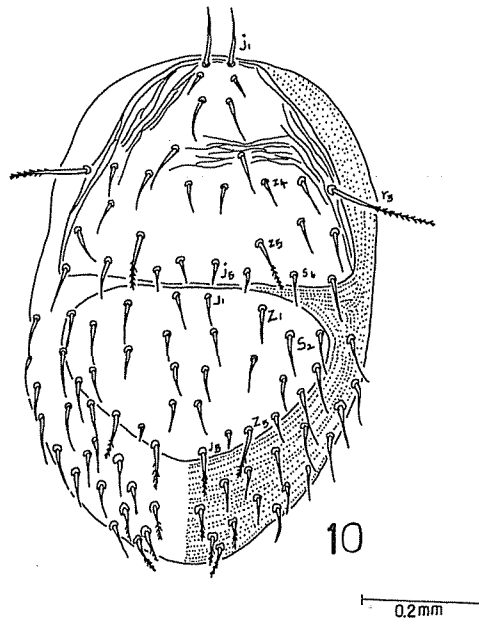


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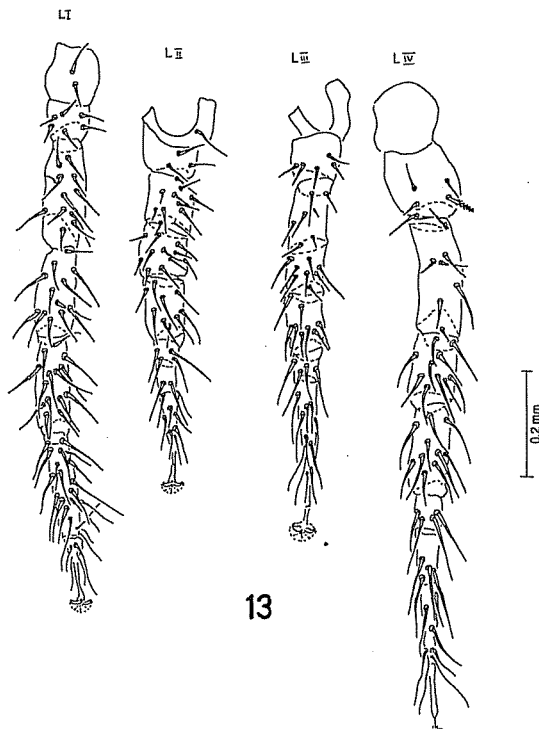
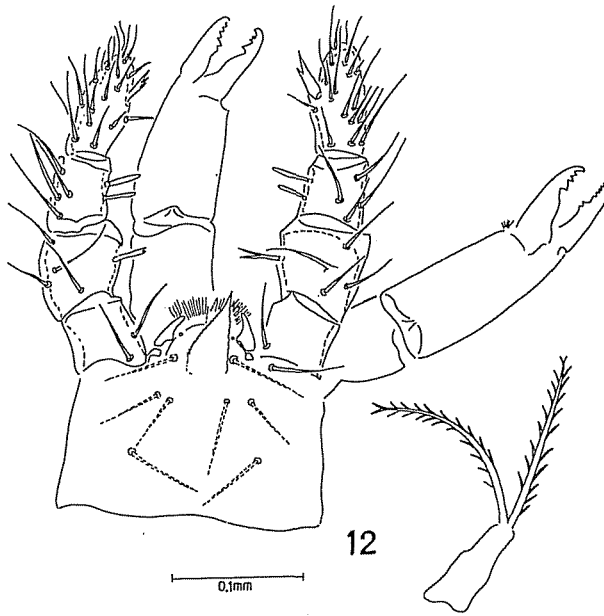


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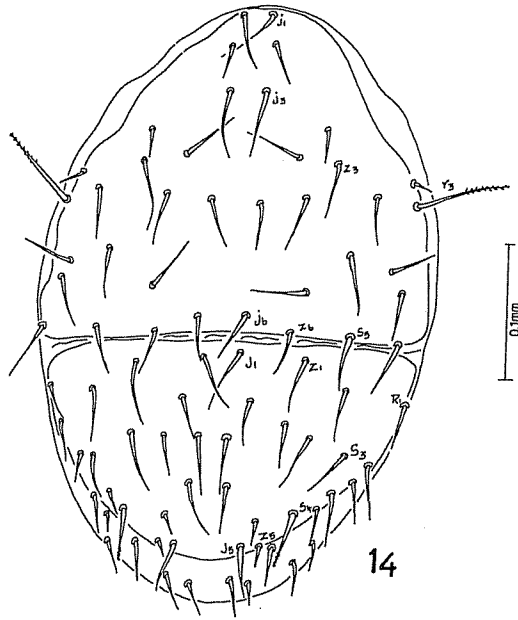
Figures 8-9. *Poecilochirus simplisetae* n. sp. deutonymph,  
8. Gnathosoma and tritosternum, 9. Legs I-IV.



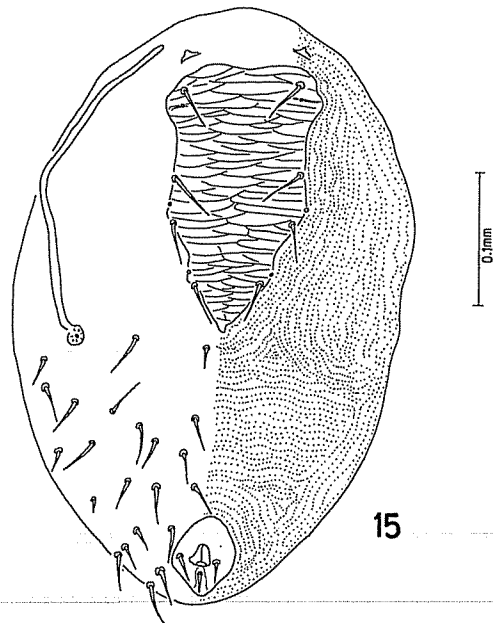
Figures 10-11. *Poecilochirus torbaliensis* n. sp. deutonymph, 10. Dorsal view, 11. Ventral view.



Figures 12-13. *Poecilochirus torbaliensis* n. sp. deutonymph, 12. Gnathosoma and tritosternum, 13. Legs I-IV.

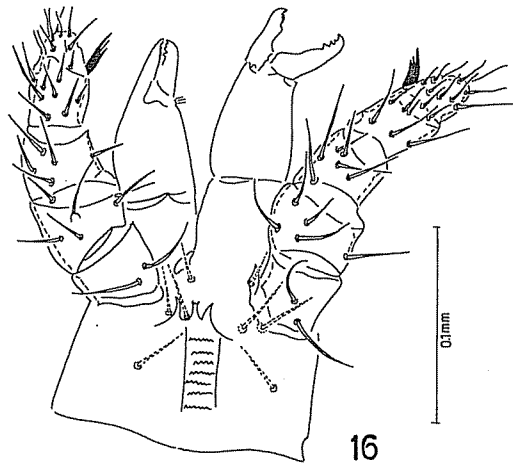


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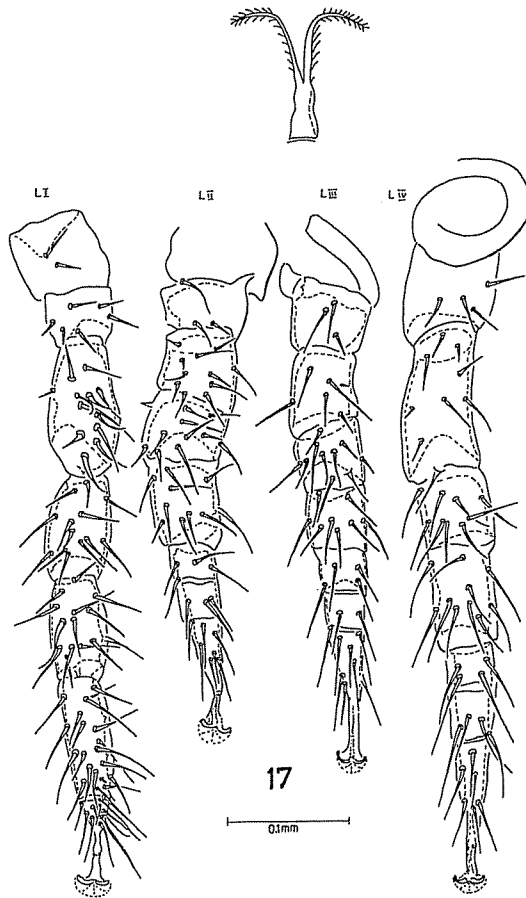


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Figures 14-15. *Poecilochirus belkahvensis* n. sp. deutonymph,  
 14. Dorsal view, 15. Ventral view.



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Figures 16-17. *Poecilochirus belkahvensis* n. sp. deutonymph, 16. Gnathosoma and tritosternum, 17. Legs I-IV.