

## IRANIAN CUNAXIDAE (ACARI: PROSTIGMATA: BDELLOIDEA). PART I. SUBFAMILY COLEOSCIRINAE

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**ABSTRACT** – Six cunaxid species of three known genera, including one new species are reported for the first time from Iran. The known species are *Coleobonzia saaymani* (Den Heyer, 1975), *Coleoscirus simplex* (Ewing, 1917), *Coleoscirus buartsus* Den Heyer, 1980b, *Coleoscirus breslauensis* Den Heyer, 1980b and *Coleoscirus tuberculatus* Den Heyer, 1978. The new species, *Neoscirula sepasgosariani*, is described and illustrated. A key for the Iranian Coleoscirinae is given.

**Key words** – Acari, Cunaxidae, Coleoscirinae, Iran, identification key, taxonomy.

### INTRODUCTION

This is the first of a series of articles planned for cunaxid species from Iran.

The members of the family Cunaxidae are free-living predatory mites that ambush their prey; some even spin silk traps to capture them (Alberti and Ehrnsberger, 1977). They are recorded from plants, mosses, litter, decomposing bark, soil, stored products (Den Heyer, 1981a; Corpuz-Raros and Garcia, 1995; Gerson *et al.*, 2003) and small mammal burrows (El-Bishlawy and Rakha, 1983). However, very little is known about the effectiveness of Cunaxidae to control pests on an economic scale. Two species of the subfamily Coleoscirinae, *Coleoscirus simplex* and a *Neoscirula* sp., prey on a variety of small invertebrates, such as vermiform nematodes and soil arthropods; the former species was also proved to be cannibalistic (Walter and Kaplan, 1991). The Coleoscirinae are mites cosmopolitan in distribution (Berlese, 1904; Ewing, 1917; Den Heyer, 1978; Chaudrhi *et al.*, 1979; Walter and Kaplan, 1991; Corpuz-Raros and Garcia, 1995; Bashir *et al.*, 2006). The subfamily features were described by Den Heyer (1978).

### MATERIALS AND METHODS

Part of the material used in this study was collected by students of the University of Bu Ali-Sina, during 1992–2005 and by the Iranian co-author during a research project conducted on the alfalfa weevil in lucerne fields in the Hamadan Province. These collections together with additional material from the Arthropoda Collection of the Bu Ali-Sina University, form the basis of this paper. The dorsal setal notation of Kethley (1990), as adapted by Den Heyer and de Castro (2008a, b) for the Bdelloidea, is adopted; setal forms (kinds) as well as notations for appendages follow that of Den Heyer (1981b); except that the terminology and abbreviation for the peo structure on tarsus I is changed to famulus (fmls). Setal notation for the venter, as recommended by Den Heyer and de Castro (2008a, b) is applied. Measurements are given in micrometers ( $\mu\text{m}$ ); holotype dimensions first, followed by the range between parentheses; in the redescrptions of existing species, the average is followed by the range in brackets. Scale bars indicate 100  $\mu\text{m}$ , unless otherwise indicated in the figure. The classification system follows Den Heyer (1980a). The

specimens were mounted on slides using Hoyer's, or PVA (polyvinyl alcohol). The type material of the new species will be deposited in the National Mite Collection of ARC – Plant Protection Research Institute, Pretoria, South Africa.

### Family CUNAXIDAE Thor, 1902

Type genus: *Cunaxa* Von Heyden, 1826

Palps three-, four- or five-segmented with strong spines, spurs, solenidion, tubercles or apophyses: tibiotarsi terminate in either a strong claw in an association with a terminal solenidion or two distal end setae and solenidion. Their palpi are modified for grasping their prey. Hypognathum bearing four or six pairs of ventral (*hg*) setae, either simple tactile or geniculate (only *hg1*) setae; cheliceral setae absent or present. Dorsum with nil to 19 smooth, striate or reticulate shields, bearing two pairs of long, pilose sensillae *vi* and *sce* as well as eight, nine, 10 or 12 pairs of tactile setae. Punctuate, striate or reticulate propodosomal coxal plates I and II may be separate, partly fused or fused to form a sternal plate; genital valves with usually four pairs (but may vary from 3 to 11 pairs) of *g*-setae and anal valves with one to three pairs of setae. Leg tarsi with or without lobes; tarsi I with proximal or distal famulus [*pe* (*pe* is correct) organ of all previous Den Heyer papers]; leg tarsi III and IV may be provided with knobbed (knob very minute) *dt* setae. Tibia IV with either smooth or pilose trichobothrium, or without. The body colour ranges from orange, red, green, purple to brown.

### Subfamily COLEOSCIRINAE Den Heyer, 1978

Type tribus: Coleoscirini Den Heyer 1980a

#### Key to the tribes, genera and species of the Iranian Coleoscirinae

1. Idiosomal shields weakly sclerotized and often poorly demarcated; dorsal shields usually restricted to propodosoma; ventral shields, when presented, restricted to coxal and genital regions [Tribus **Neoscirulini** Den Heyer, 1980a] ..... **2**  
Idiosomal shields usually well sclerotized and clearly demarcated; dorsal shield(s) (up to 19 in number) partially cover(s) the hysterosoma; females with a sternal shield, males with an entire ventral shield [Tribus **Coleoscirini** Den Heyer, 1980a]..... **Coleoscirus** Berlese, 1916.....**4**

2. Palpal tibiotarsus short and nearly cone-like; palpal basi- and telofemur each with a simple tactile or spine-like seta; cheliceral trochanters relatively broad; both sexes with only a propodosomal shield ..... **Neoscirula** Den Heyer, 1977  
..... **Neoscirula sepagosariani** n. sp.  
Palpal tibiotarsus long, slender, often broad-based and approximately S-shaped; palpal basi- and telofemur each with a simple tactile seta; cheliceral trochanters of normal width .....  
..... **Coleobonzia** Den Heyer and Castro, 2008  
..... **Coleobonzia saaymani** (Den Heyer, 1975)
3. Solenidion formula of genua I-IV 4-3-1-1; chaetotaxy basifemora I-IV 5-6-4-2 sts; two pairs anal setae; no para-anal (*h6*) setae; hysterosomal setae on dorsal shield of females four pairs, in males four pairs (+ two pairs + one pair) [NB setal pairs between parentheses indicate those setae borne on additional posterior hysterosomal shields]; venter of male covered by ventral shield; dorsal idiosomal plate and ventral shields in both sexes more or less evenly sclerotized..... **4**  
Solenidion formula of genua I-IV 4-3-1-2; chaetotaxy basifemora I-IV 5-6-5-2 sts; anal setae two pairs; one pair of para-anal (*h6*) setae; number of hysterosomal setae on dorsal shield in female five or six pairs, in males four pairs (+ two pairs + one pair) or four pairs (+ two pairs) ..... **5**
4. Dorsal idiosomal shield with unevenly spread papillae, some of which form rows to produce a pseudoreticulation pattern; palpal tibiotarsus about four times longer than broad; tubercle on palpal tibiotarsus coniform .....  
..... **Coleoscirus buartsus** Den Heyer, 1980b  
Dorsal idiosomal shield with evenly distributed papillae but posteriad and laterad to sensillae *sce* papillae rows are formed; palpal tibiotarsus about three times longer than broad, with a prominent tubercle being about as broad as long ..... **Coleoscirus tuberculatus** Den Heyer, 1978
5. Number of hysterosomal setae on dorsal shield in females five pairs and in males four pairs (+ two pairs + one pair) .....  
..... **Coleoscirus simplex** (Ewing, 1917)  
Number of hysterosomal setae on dorsal shield in females six pairs and in males four pairs (+ two pairs).....  
..... **Coleoscirus breslauensis** Den Heyer, 1980b

### Tribus NEOSCIRULINI Den Heyer 1980a

Type genus: *Neoscirula* Den Heyer 1977a

## Genus *Neoscirula* Den Heyer, 1977a

Type species: *Neoscirula theroni* Den Heyer, 1977a

**Etymology** – When this genus was described by Den Heyer (1977a) the general body form reminded him of that of the genus *Scirula* Berlese and he called this genus *Neoscirula*.

### *Neoscirula sepasgosariani* n. sp. (Figs. 1–13)

**Diagnosis** – Palpal tibiotarsus in both sexes provided with a strong, curved tubercle and cheliceral setae very strongly developed. Dorsal shield provided with small and larger papillae creating the impression of interlacing transverse chords.

**FEMALE** – Dimensions [holotype (range) average]. Idiosoma: length 327 (327–385) 356; width 169 (169–231) 200; length hypognathum 135 (135–154) 145; width hypognathum 92 (92–?) 92; length palp 94 (94–112) 103; length chelicera 123 (123–139) 131; length legs I 196 (193–196) 195; leg II 177 (177–181) 179; leg III 200 (200–231) 216; leg IV 196 (196–216) 206; length sensillae *vi* 131 (116–131) 124, *sce* 119 (102–119) 111; T (trichobothria tibiae IV) 54 (50–54) 52.

**Dorsum** (Figs. 1–3) – Poorly demarcated propodosomal shield provided with papillae arranged as indicated in Fig. 1. The finely setose sensillae *vi* (Fig. 2) and *sce* (Fig. 3) of unequal length; the former being the longest. Setae *ve* and *sci* of unequal length, *ve* being longest. Setae *sci* well behind sensillae *sce*; setae *ve* more or less halfway between *vi* and *sce*. No hysterosomal dorsal shields. Integumental striae with papillae of larger and smaller sizes on the same stria. Setae *f*<sub>2</sub> present.

**Venter** (Fig. 4) – Coxal regions in two groups on either side, namely I + II and III + IV. Propodogastral setae immediately behind posteromedian extensions of coxae II. Paracoxal setae on median edges of coxae IV, two pairs anal setae, hystergastral seta 10 (five pairs), paragenitals one pair and para-anals one pair.

**Palp** (Fig. 5) – Chaetotaxy: trochanter 0, basifemur 1 sts, telofemur 1 sts, genu 4 sts, tibiotarsus 1 large ventral curved tubercle, 4 sts, 1 tsl. All joints with finely papillated integument.

**Chelicerae** (Fig. 6) – Cheliceral seta very prominent and looks like a solenidion.

**Hypognathum** (Fig. 7) – Two pairs of adoral and four pairs of *hg* setae.

**Legs** (Figs. 8–11) – Leg chaetotaxy: coxae I–IV 3 sts, 1 peg-3 sts-3 sts-2 sts, 1 pcs; trochanters I–IV 1-1-2-1 sts; basifemora I–IV 3-4-4-2 sts; telofemora I–IV 5-5-4-3 sts; genua I–IV 4 asl, 5 sts-3 asl, 5 sts-1 asl, 5 sts-1 asl, 5 sts; tibiae I–IV 1 asl, 1 bsl, 5 sts-1 bsl, 5 sts-1 bsl, 5 sts-1T, 4 sts; tarsi I–IV 2 asl, 2 bsl, 1 fmls, 1 dtsl, 2 tsl, 21 sts-1 bsl, 1 dtsl, 1 tsl, 22 sts-1 tsl, 17 sts-19 sts.

**MALE** – Dimensions: idiosoma: length 200; width 169; length hypognathum 89; width hypognathum 51; length palp 62; length chelicera 81; length legs: leg I 146; leg II 135; leg III 154; leg IV 150; length sensillae *vi* 96, *sce* 85; T 31.

**Idiosoma** – Dorsum and gnathosomal structures resemble those of the female.

**Venter** – As the venter is torn it is difficult to determine the number of hystergastral as well as the position of the paracoxal and propodogastral setae. The genital valves carry an almost straight row of *g*<sub>4</sub> setae each (Fig. 11). One pair of para-anal and two pairs of anal setae are present.

**Legs** (Figs. 12 and 13) – Leg chaetotaxy differs from female only on the mentioned joints as follows: basifemora I–IV 2-2-1-0 sts; genua I and II 1 bsl, 3 asl, 5 sts-1 bsl, 2 asl, 5 sts; tibiae I 1 long bsl, 1 asl, 5 sts; tarsi I–IV 1 long bsl, 3 asl, 1 fmls, 1 dtsl, 2 tsl, 14 or 15 sts-1 bsl, 1 dtsl, 1 tsl, 17 or 18 sts-1 tsl, 15 sts-14 sts.

**Type material** – Holotype female, one paratype female (22 June 2005) and one paratype male (13 August 2005), soil, Jahrom, 28°31' N, 53°33' E, Iran, Narjes Khademi.

**Remarks** – This species is most closely related to *Neoscirula hoffmannae* Mejía-Recamier and Palacios-Vargas, 2007 because of the size of its palpal tubercle but differs from that species as follows; propodosomal shield with a considerable different papilla pattern (Fig. 1). The latter authors mentioned a total of only 18 solenidia on the male three distal leg segments of the latter species; in *N. sepasgosariani* 24 solenidia are present on these joints.

**Etymology** – This species is named for the Iranian acarologist, Dr. Hossein Sepasgosarian, for his complimentary work on the Cunaxidae.

## Genus *Coleobonzia* Den Heyer and Castro, 2008

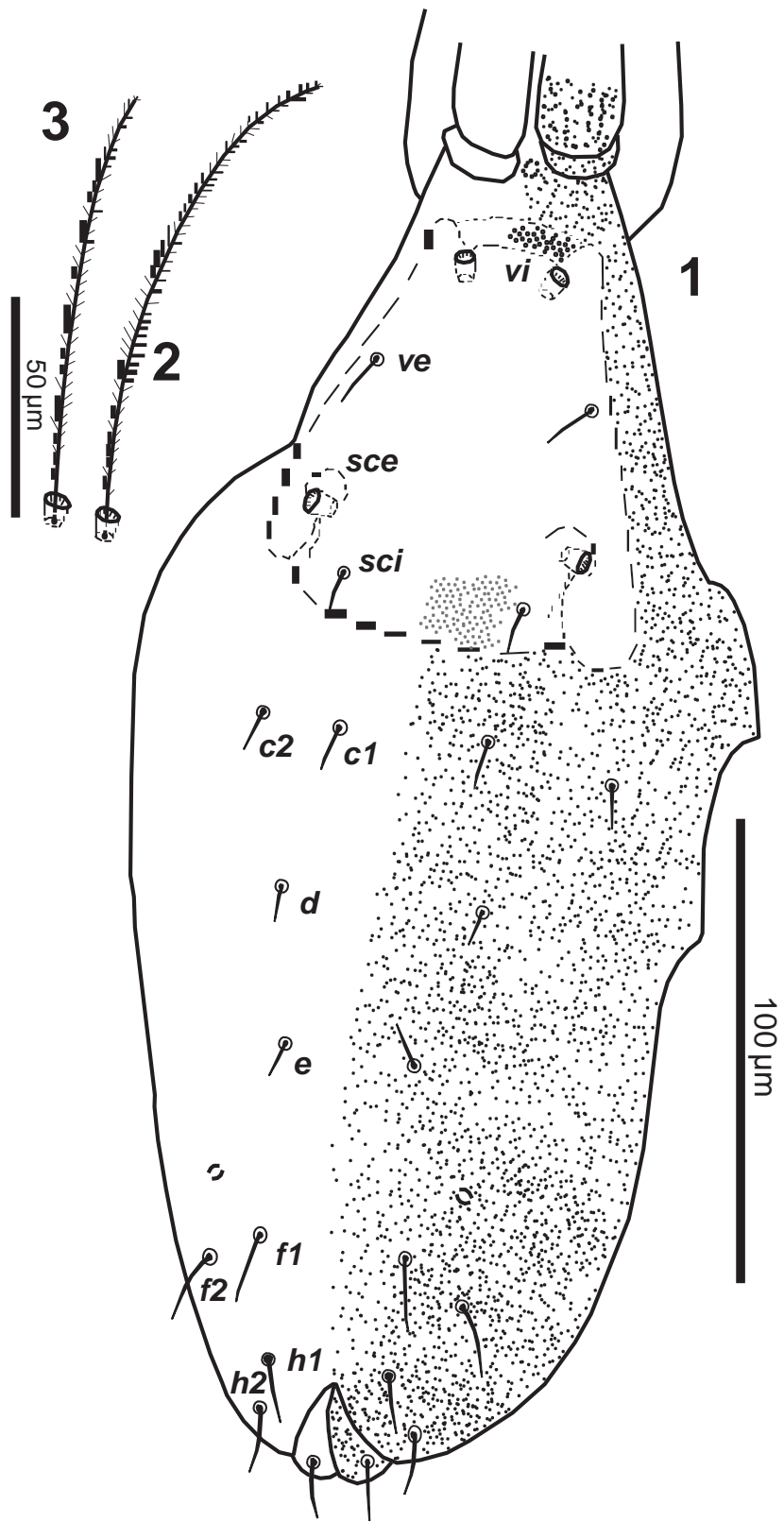
Type species: *Coleobonzia argillae* (Den Heyer, 1977b)

### *Coleobonzia saaymani* (Den Heyer, 1977b) (Figs. 14–23)

*Pseudobonzia saaymani* Den Heyer 1977b: 178

**Diagnosis** – Except for a few minor differences the Iranian female specimen is almost similar to its South African counterpart. Tarsi I with three proximal solenidia; large proximal solenidion not transversely striated. Tarsi II with very stout solenidion.

**FEMALE** – Dimensions: idiosoma: length 259; width 135; length hypognathum, 92; width hypognathum 49; length palp 81; length chelicera 86; length legs: leg I 119; leg II 119; leg III 135; leg IV 157; length sensillae *vi* 54, *sce* 70.



Figs. 1–3. *Neoscirula sepasgosariani* n. sp., female – 1. dorsal view; 2. seta sce; 3. seta vi.

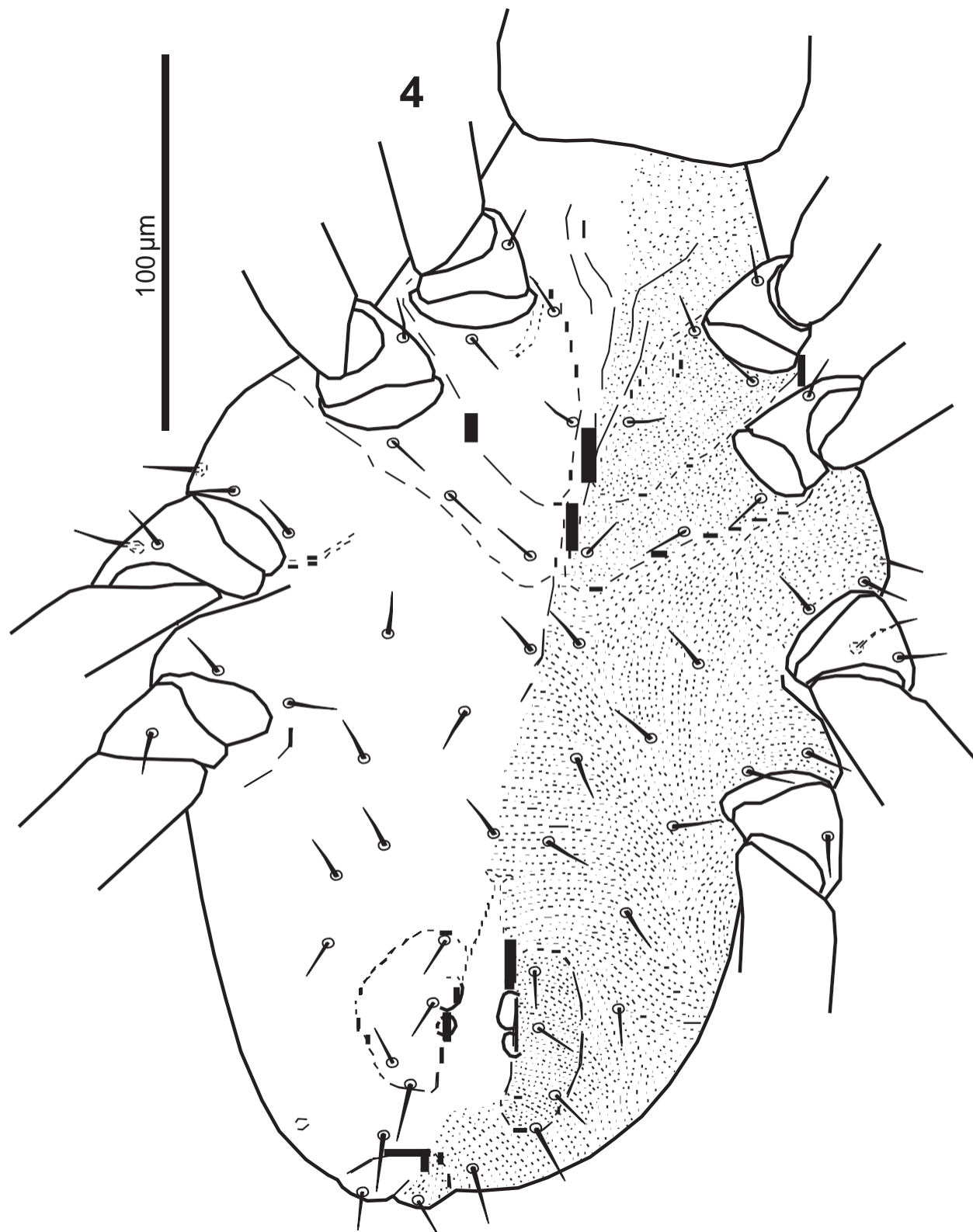
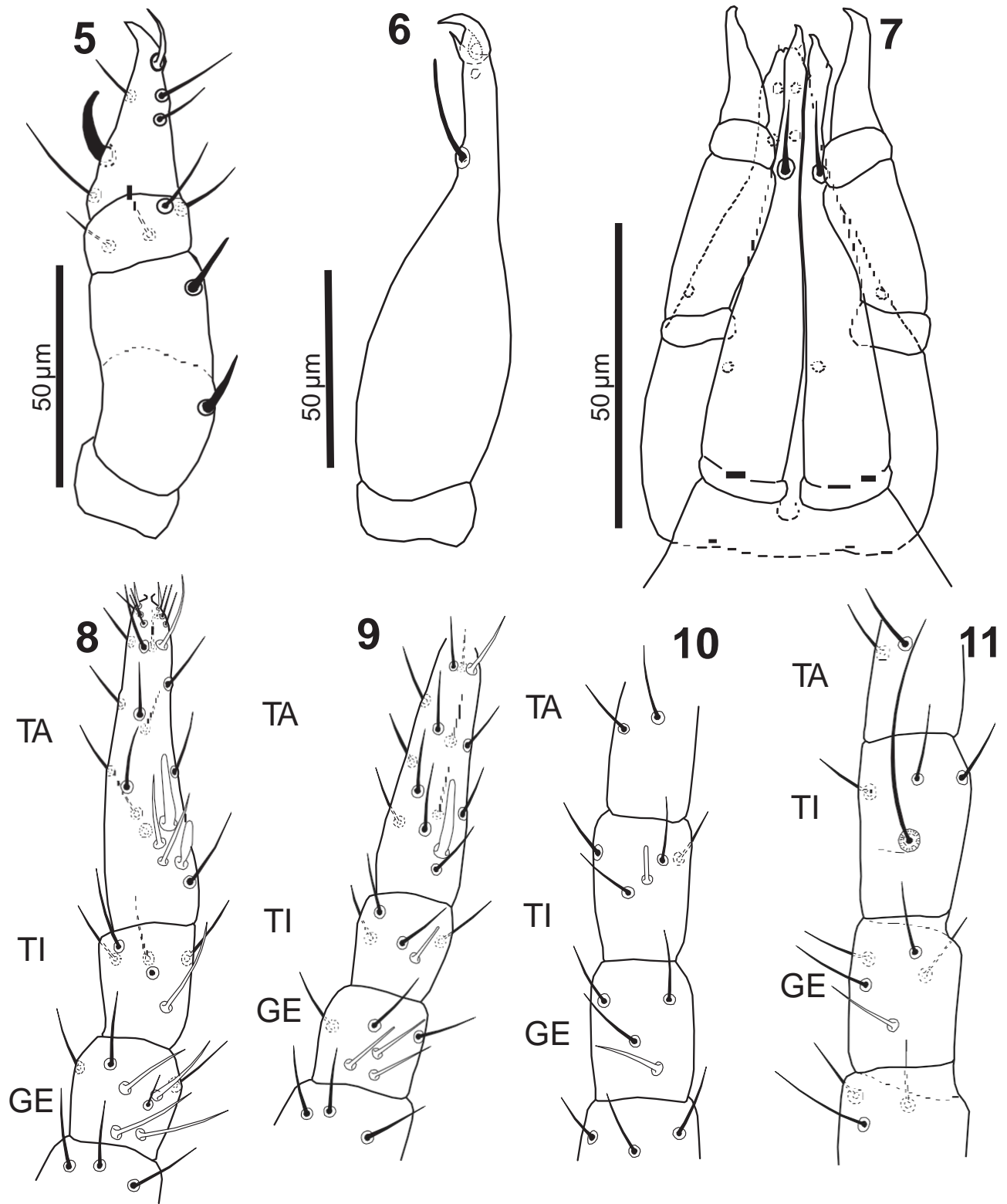
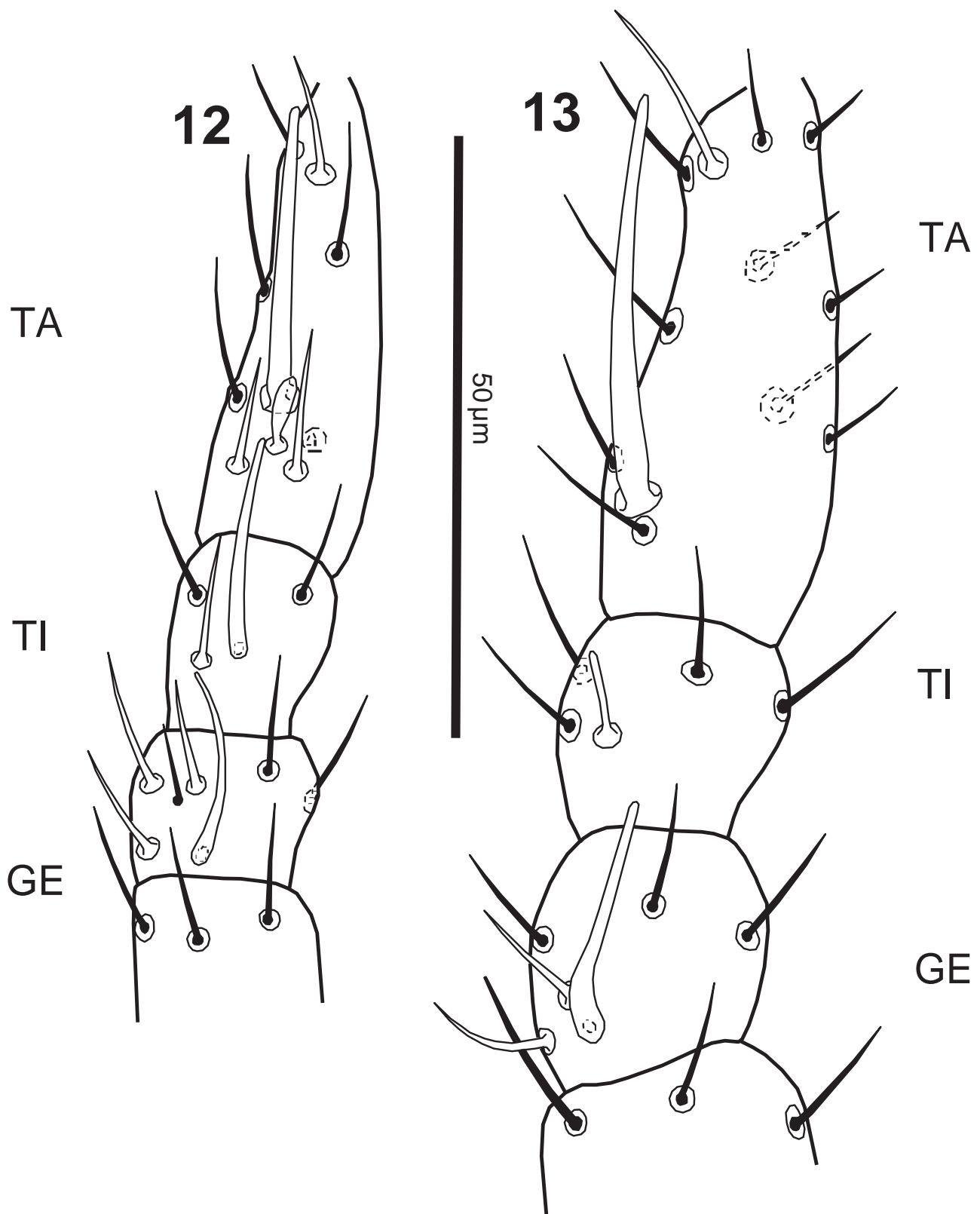


Fig. 4. *Neoscirula sepasgosariani* n. sp., female – ventral view.



Figs. 5–11. *Neoscirula sepasgosariani* n. sp., female – 5. palp; 6. chelicera; 7. hypostome; 8. leg I; 9. leg II; 10. leg III; 11. leg IV.



Figs. 12 and 13. *Neoscirula sepasgosariani* n. sp., male – 12. leg I; 13. leg II.

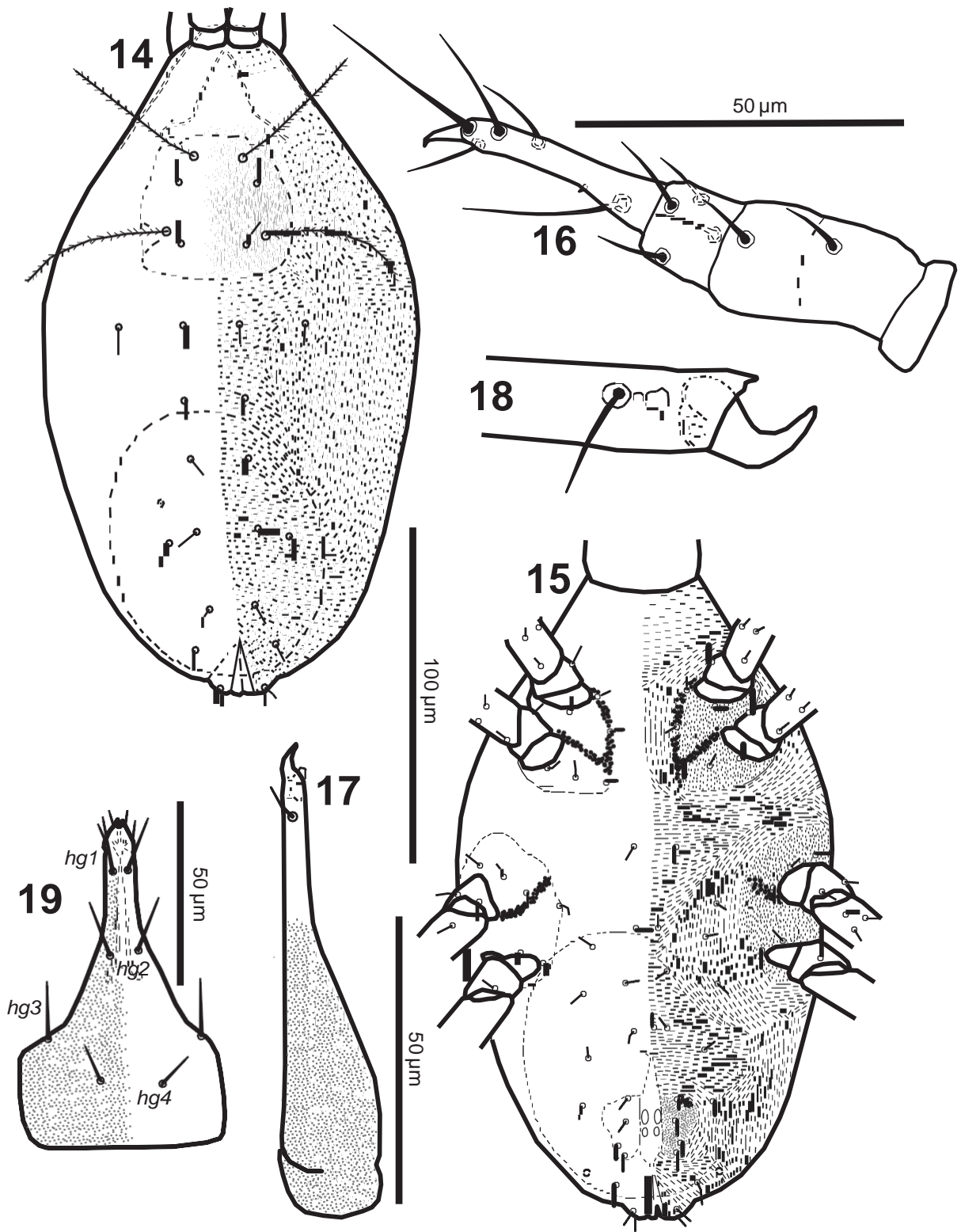
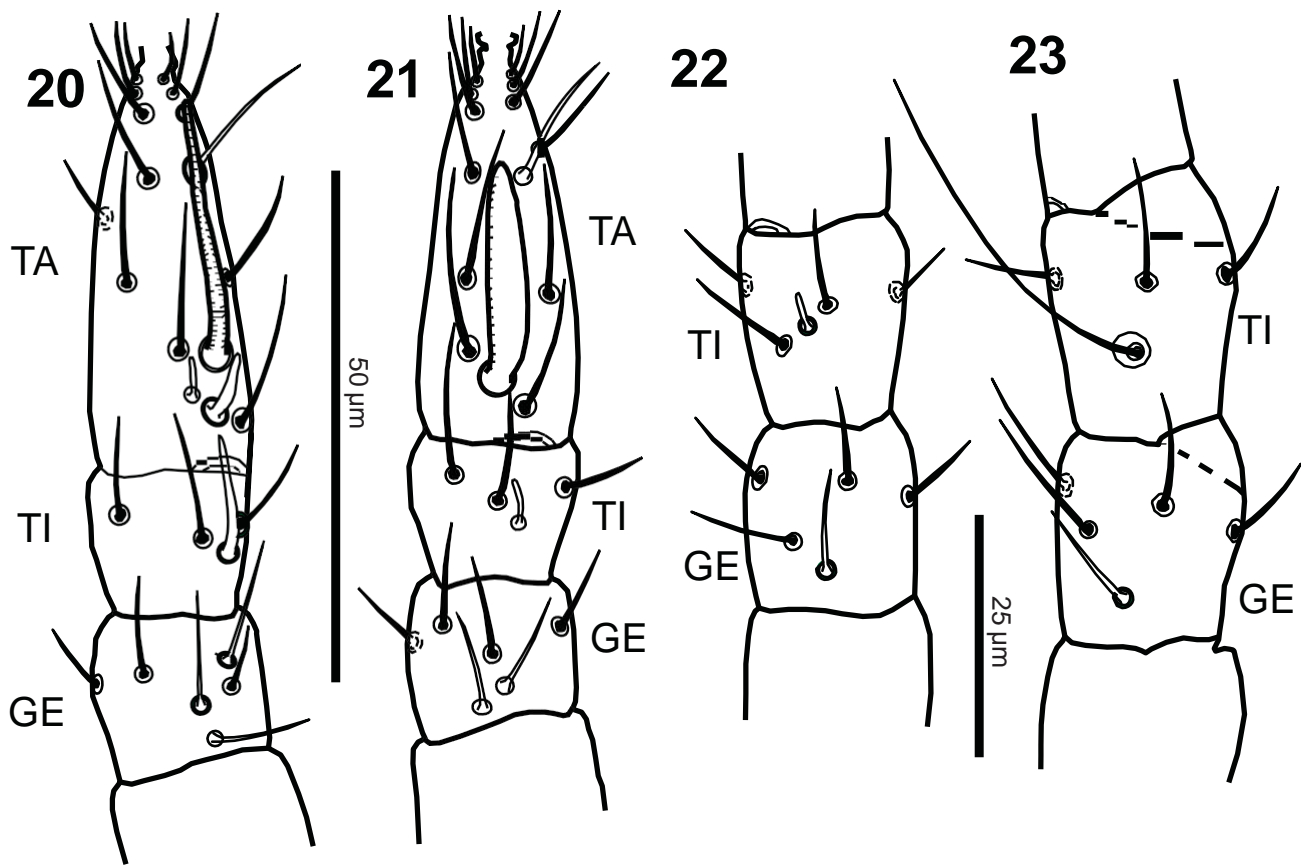


Fig. 14–19. *Coleobonzia saaymani* (Den Heyer), female – 14. dorsal view; 15. ventral view; 16. palp; 17. chelicera; 18. chela; 19. hypostome.



Figs. 20–23. *Coleobonzia saaymani* (Den Heyer), female – 20. leg I; 21. leg II; 22. leg III; 23. leg IV.

*Idiosoma* (Figs. 14 and 15) – Dorsum as in South African specimen (Den Heyer, 1977b: 178, Fig. 34). Venter with the following setae: one pair propodogastral setae, one pair paracoxal setae, one pair paragenitals, 12 hystergastral setae, four pairs *g* setae, two pairs anal setae, one pair para-anal setae. All other features typical for the species. All gnathosomal components (Figs. 16–19) conform to South African material.

*Legs* (Figs. 20–23) – Leg chaetotaxy as in South African material with only following difference: basifemora I–IV 4–4 or 5–4–2 sts.

**Specimen examined** – one female, *Medicago sativa* L. (Fabaceae), Jolfa, Iran, 12 October 2006, P. Lotfollahi.

#### Tribus COLEOSCIRINI Den Heyer, 1980a

Type genus: *Coleoscirus* Berlese 1916

When describing *Coleoscirus trudus* from Pakistan, Bashir *et al.* (2006) wrongly reported that Sepsasgarian (1984) erected the subfamily Coleoscirinae. This subfamily was already erected by Den Heyer (1978) to include those cunaxids with five-jointed palps of which

only a part of the tibiotarsus projects beyond the entomalae; in conjunction with that feature they have a short hypostomal region in front of *hg1*. A typical feature of all Coleoscirinae is that the distance of the region anterior to setae *hg1* to the tip of the entomalae is as long as or shorter than the distance between *hg1* and *hg2*. This feature could be expressed as a ratio in cunaxid systematics.

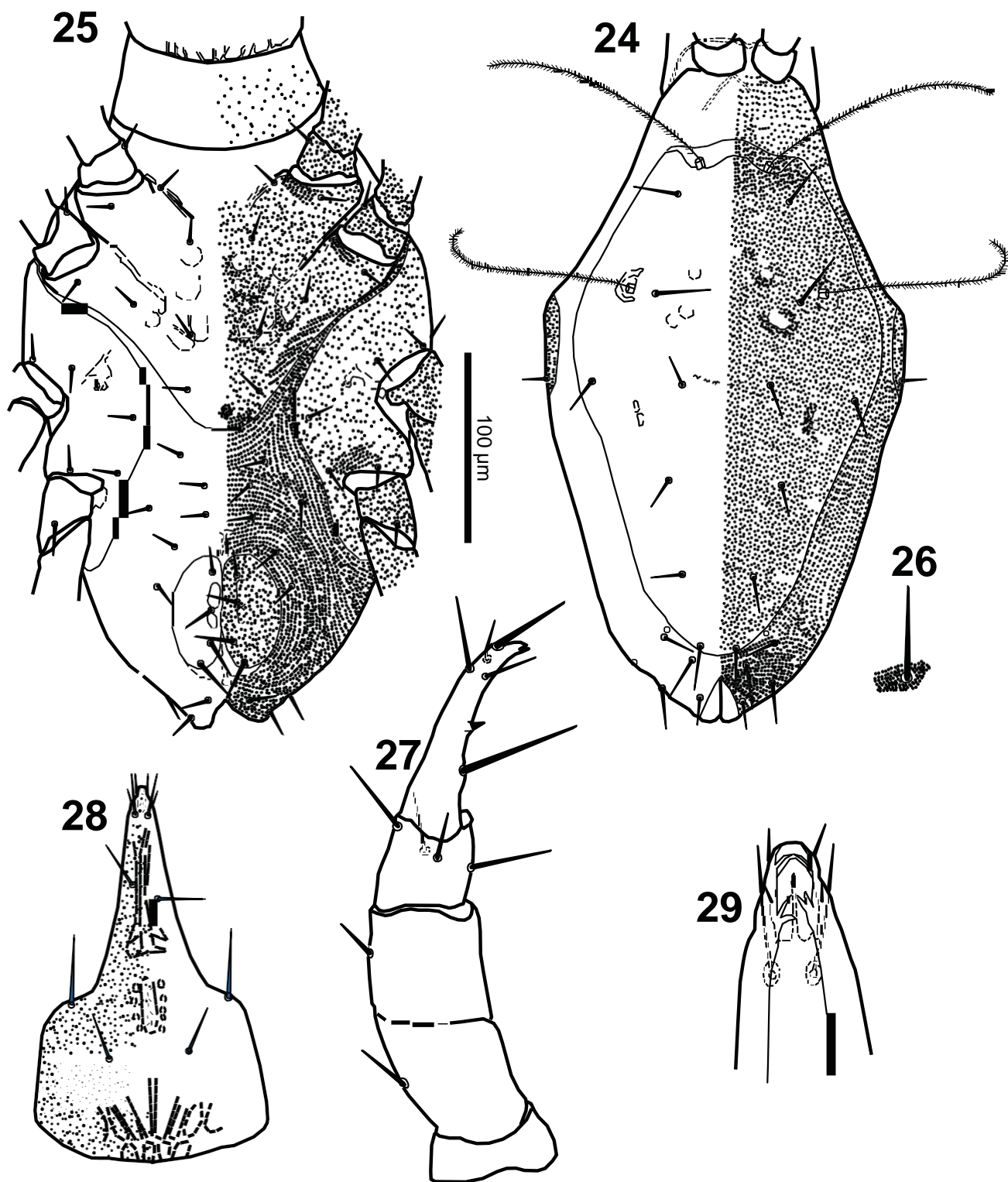
#### Genus *Coleoscirus* Berlese, 1916

Type species: *Coleoscirus halacaroides* (Berlese, 1916)

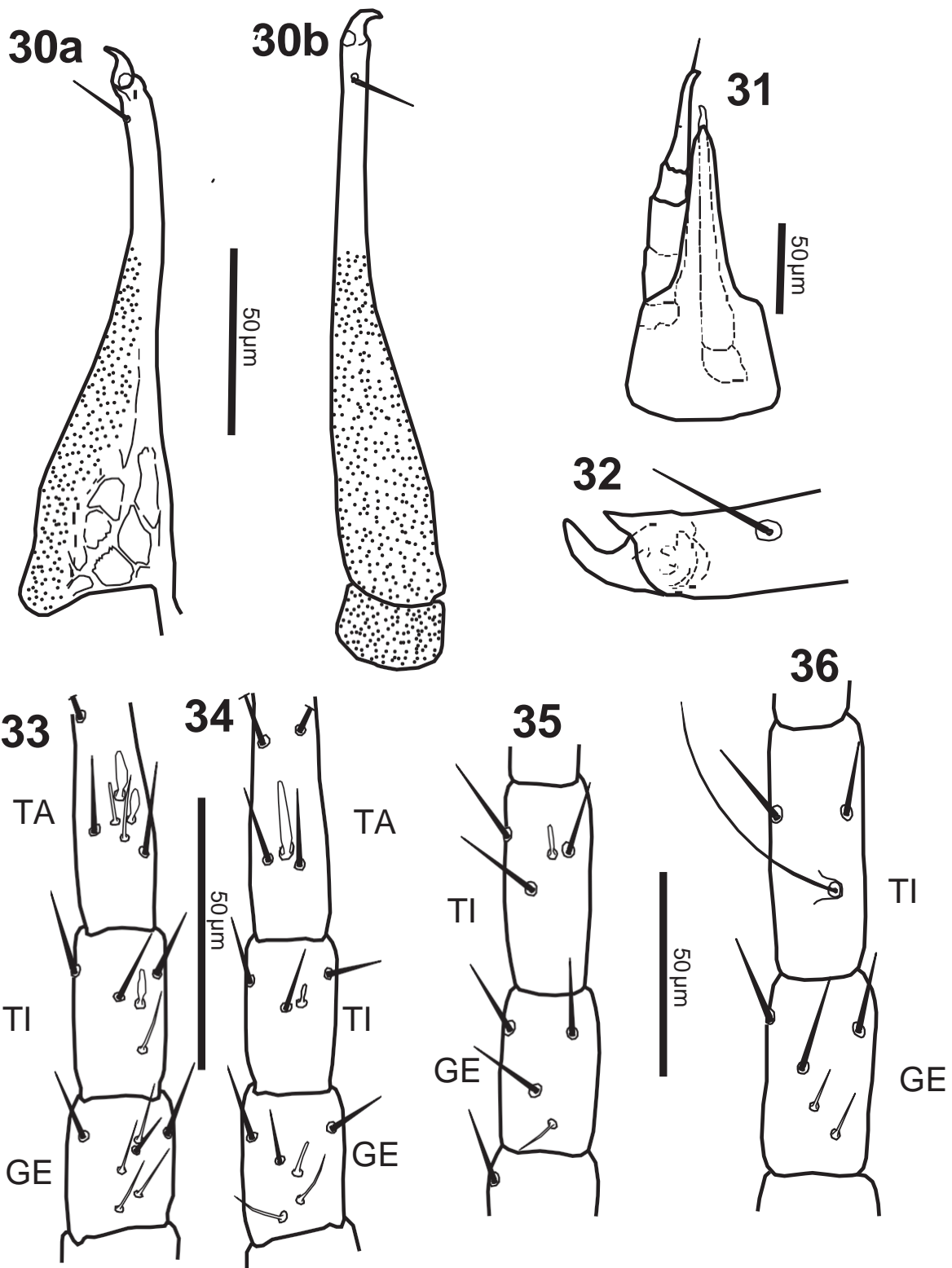
Mites with a cosmopolitan distribution (Berlese, 1904; Ewing, 1917; Den Heyer, 1978; Chaudrhi *et al.*, 1979; Walter and Kaplan, 1991; Corpuz-Raros and Garcia, 1995; Bashir *et al.*, 2006). The detailed generic features are described by Den Heyer (1978).

#### *Coleoscirus simplex* (Ewing, 1917) (Figs. 24–36)

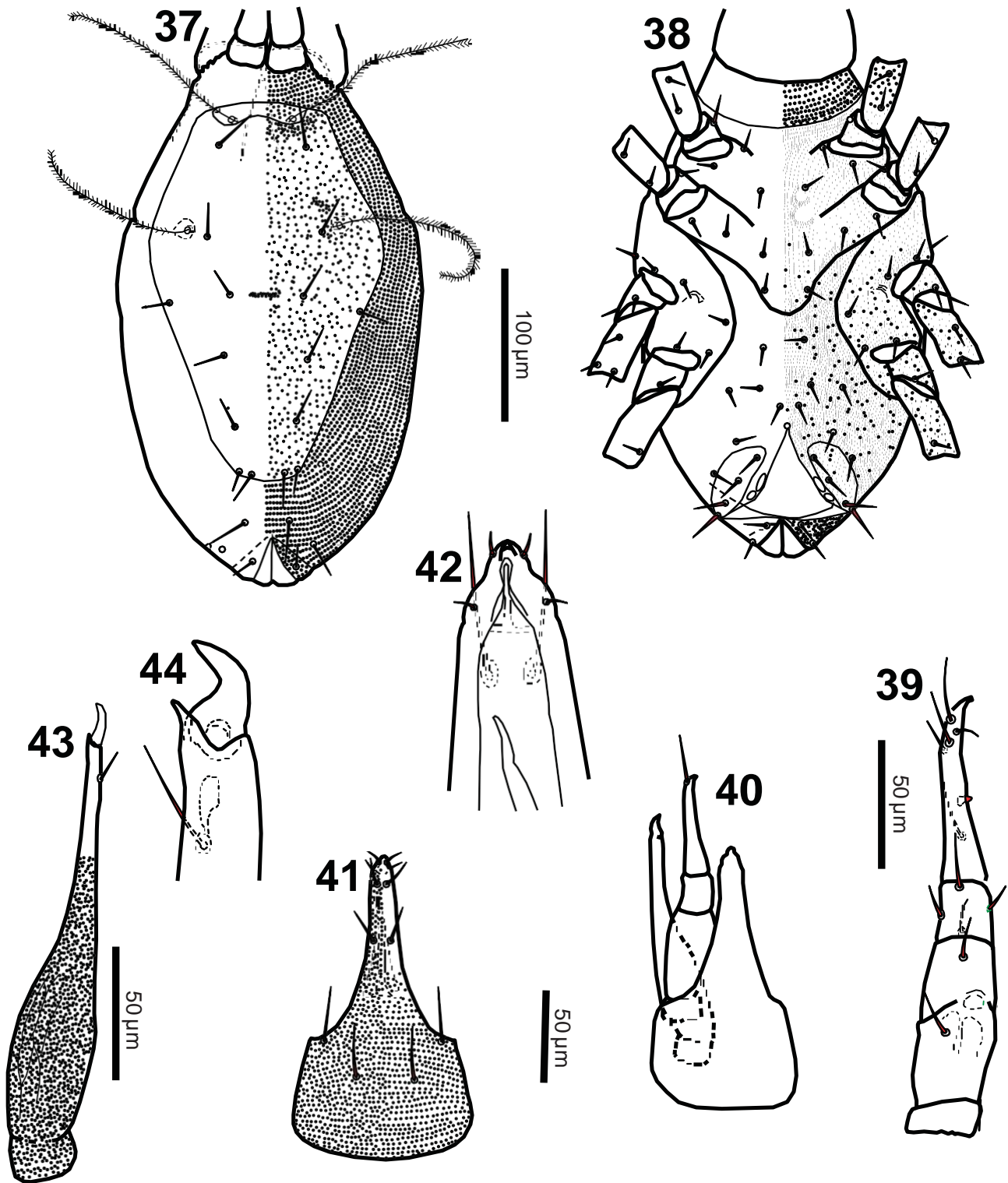
*Scirus simplex* Ewing, 1917: 150.



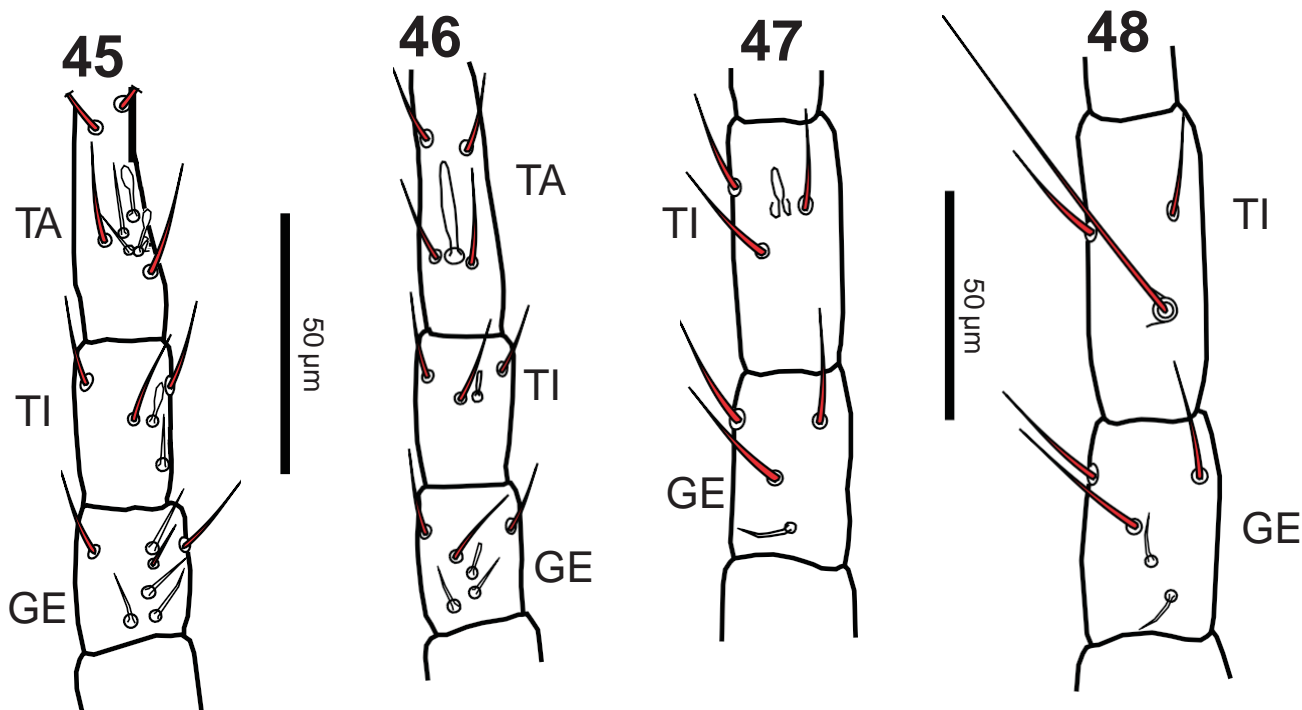
Figs. 24–29. *Coleoscius simplex* (Ewing), female – 24. dorsal view; 25. ventral view; 26. seta f1; 27. palp; 28. hypostome; 29. entomalae.



Figs. 30–36. *Coleoscirus simplex* (Ewing), female – 30a, b. chelicerae; 31. gnathosoma; 32. chela; 33. leg I; 34. leg II; 35. leg III; 36. leg IV.



Figs. 37–44. *Coleoscirus breslauensis* Den Heyer, female – 37. dorsal view; 38. ventral view; 39. palp; 40. gnathosoma; 41. hypostome; 42. entomalae; 43. chelicera; 44. chela.



Figs. 45–48. *Coleoscirus breslauensis* Den Heyer, female – 45. leg I; 46. leg II; 47. leg III; 48. leg IV.

**Diagnosis** – This species is recognized by the following features: number of hysterosomal setae on dorsal shields in females is five pairs and in males four pairs (+ two pairs + one pair + one pair) [NB setal pairs between parentheses indicate those setae borne on additional posterior hysterosomal shields]. In the males setae *h2* may be borne on small shields or occur on the integument in the same position. Solenidion formula for genu I–IV 4-3-1-2 and chaetotaxy of basifemora I–IV 5-6-5-2 sts. One pair of para-anal and two pairs of anal setae. The natural colour varies from pale orange to intense orange in the adults; nymphal stages are slightly paler. The gnathosoma is darker coloured and legs have a colour intermediate between body and gnathosoma. Eyes are red subcutaneous spots with a gleaming appearance occurring on a line between sensillae *vi* and *sce*. In general, the dimensions are somewhat longer than in the South African specimens (Den Heyer, 1978: 533).

**FEMALE** – Dimensions: idiosoma: length 424 (401–446); width 243 (216–270); length hypognathum 177 (177–177); width hypognathum 100; length palp 158 (154–162); length chelicera 177; length legs: leg I 264 (254–277); leg II 262 (262–262); leg III 289 (277–300); leg IV 321 (308–331); length sensillae *vi* 150 (146–154), *sce* 118 (108–131).

**Idiosoma** (Figs. 24–26) – With a single, clearly demarcated, fairly evenly punctuated, idiosomal

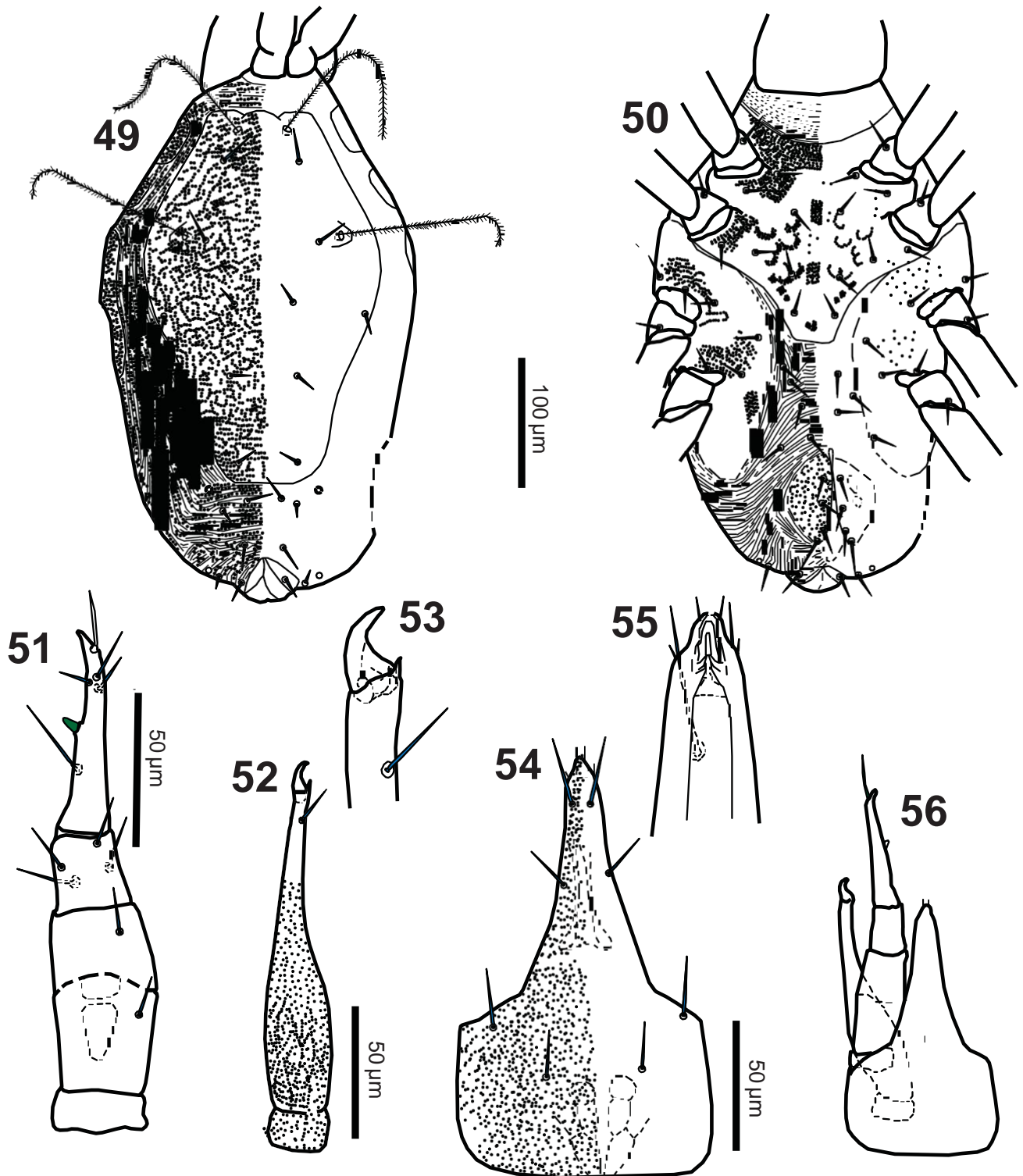
shield (Fig. 24) bearing pairs of sensillae *vi* and *sce* as well as pairs of setae *ve*, *sci*, *c1*, *c2*, *d1*, *e1*, *fl* (Fig. 26). Setae *f2*, *h1*, *h2* borne on integument. Propodogastral setae borne on the posterior region of the sternal shield. The paracoxal setae occur on the median margins of coxae IV. Hystergastral setae 8 or 9, paragenital setae two pairs (Fig. 25).

**Gnathosoma** – All gnathosomal components like their South African counterparts (Figs. 27–32).

**Legs** (Figs. 33–36) – Ambulacral claws rippled. Leg chaetotaxy : coxae I–IV 3 sts, 1 peg-3 sts-3 sts-2 sts; trochanters I–IV 1-1-2-1 sts; basifemora I–IV 5-6-5-2 sts; telofemora I–IV 4 (*n* = 3) or 5 (*n* = 1)-5-4-3 sts; genua I–IV (Figs. 34–37) 4 asl, 5 sts-2 asl, 1 bsl, 5 sts-1 asl, 5 sts-2 asl, 5 sts; tibiae I–IV 1 asl, 1 bsl, 5 sts-1 bsl, 5 sts-1 bsl, 5 sts; tarsi I–IV 1 fmls, 4 bsl, 1 dtsl, 2 tsl, 20 (or 21) sts-1 bsl, 1 dtsl, 1 tsl, 22 (or 21) sts-1 tsl, 20 (or 20) sts-21 sts.

**Specimen examined** – Two females, from soil, Old Blvd (= Old Boulevard), Ahwaz, Iran, 15 August 2003, M. Baharloo (Acc151 and 153).

**Remarks** – This species was first described by Ewing (1917) from Illinois, USA. It was redescribed by Baker and Hoffmann (1948) and Smiley (1975, 1992). Den Heyer (1978) described in detail *Coleoscirus magdalenae* from South Africa but after having studied in 1978 Ewing's type material at USDA, Beltsville, Maryland, he declared it a synonym of *C. simplex* (Den Heyer, 1980b). This species has been



Figs. 49–56. *Coleoscius buartsus* Den Heyer, female – 49. dorsal view; 50. ventral view; 51. palp; 52. chelicera; 53. chela; 54. hypognathum; 55. entomalae; 56. gnathosoma.

recently reported from the United Arab Emirates (Den Heyer, 2009). A male of *C. simplex* has been collected from garden soil at the Escola Superior Agricultura “Luiz de Queiroz,” Piracicaba, State of Sao Paulo, Brazil and is deposited there. The description and figures of Den Heyer (1978) serve as the basis for *C. simplex* in the Iran material; variations will be indicated.

***Coleoscius breslauensis* Den Heyer, 1980b  
(Figs. 37–48)**

*Coleoscius breslauensis* Den Heyer, 1980b: 109.

**Diagnosis** – Females bear setae *fl* and *f2* on the posterior edge of the dorsal idiosomal shield. They possess a single pair of para-anal setae. Chelicerae with faint reticulation pattern. The two proximal solenidia on tarsus I with proximal long stalks and bladder-like distal parts. Natural colour pale orange-pink with gnathosoma orange-coloured; legs with an intermediate colour. Natural body-form nearly diamond-shaped and “subcuticular eyes” on the lines between *vi* and *sce*, on either side, pale red in colour and with reflective appearance.

**FEMALE** – Dimensions: idiosoma: length 323; width 200; length hypognathum 200; width hypog-

nathum 85; length palp 181; length chelicera 181; length legs: leg I 293; leg II 289 (285–293); leg III 316; leg IV 343 (339–347); length sensillae *vi*, 162 (155–169), *sce*, 124 (123–125).

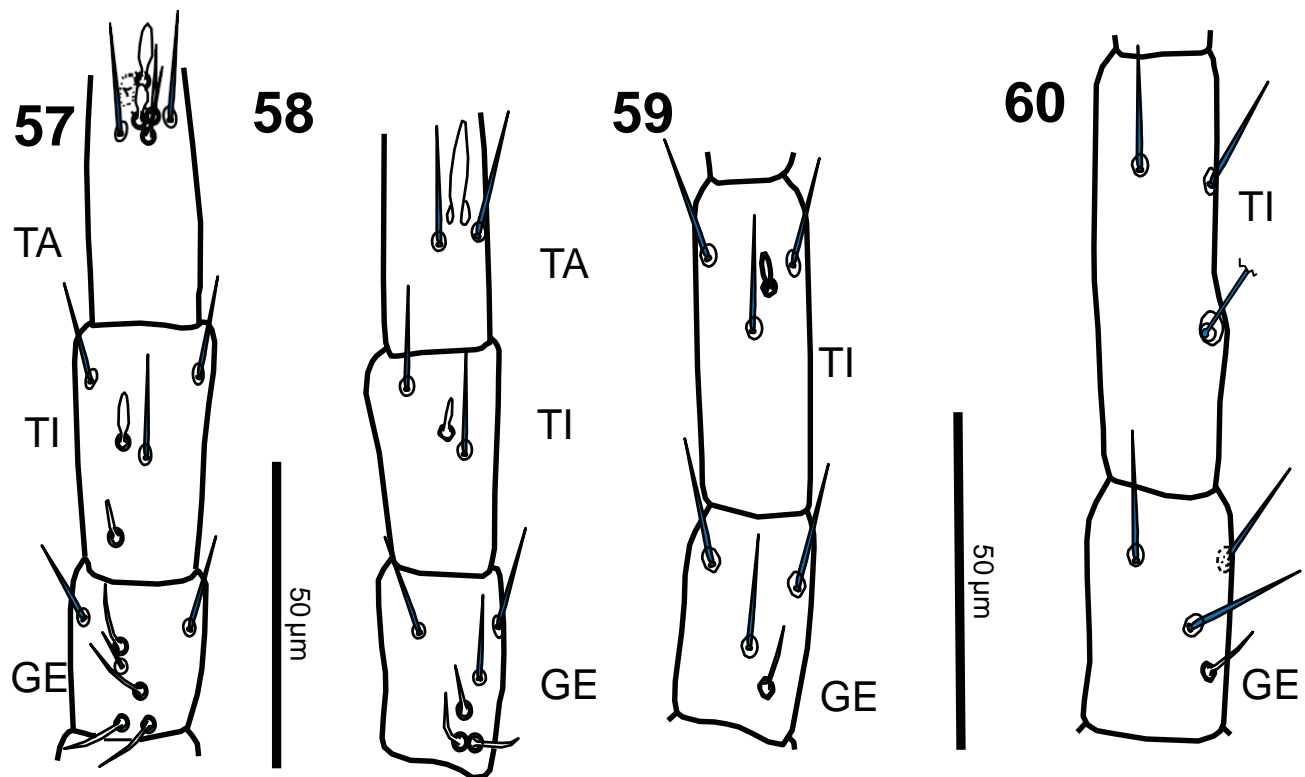
Dorsum (Fig. 37), venter (Fig. 38), hypognathum (Figs. 40–42), palp (Fig. 39), chelicerae (Figs. 43 and 44) all comply with description of features as in South African material but hypognathum, palps, chelicerae and legs all longer than averages of the South African material. Leg chaetotaxy as in South African forms (Figs. 45–48).

**Specimen examined** – One female, soil, Chamran, Uni, 15 April 2003, M. Baharloo.

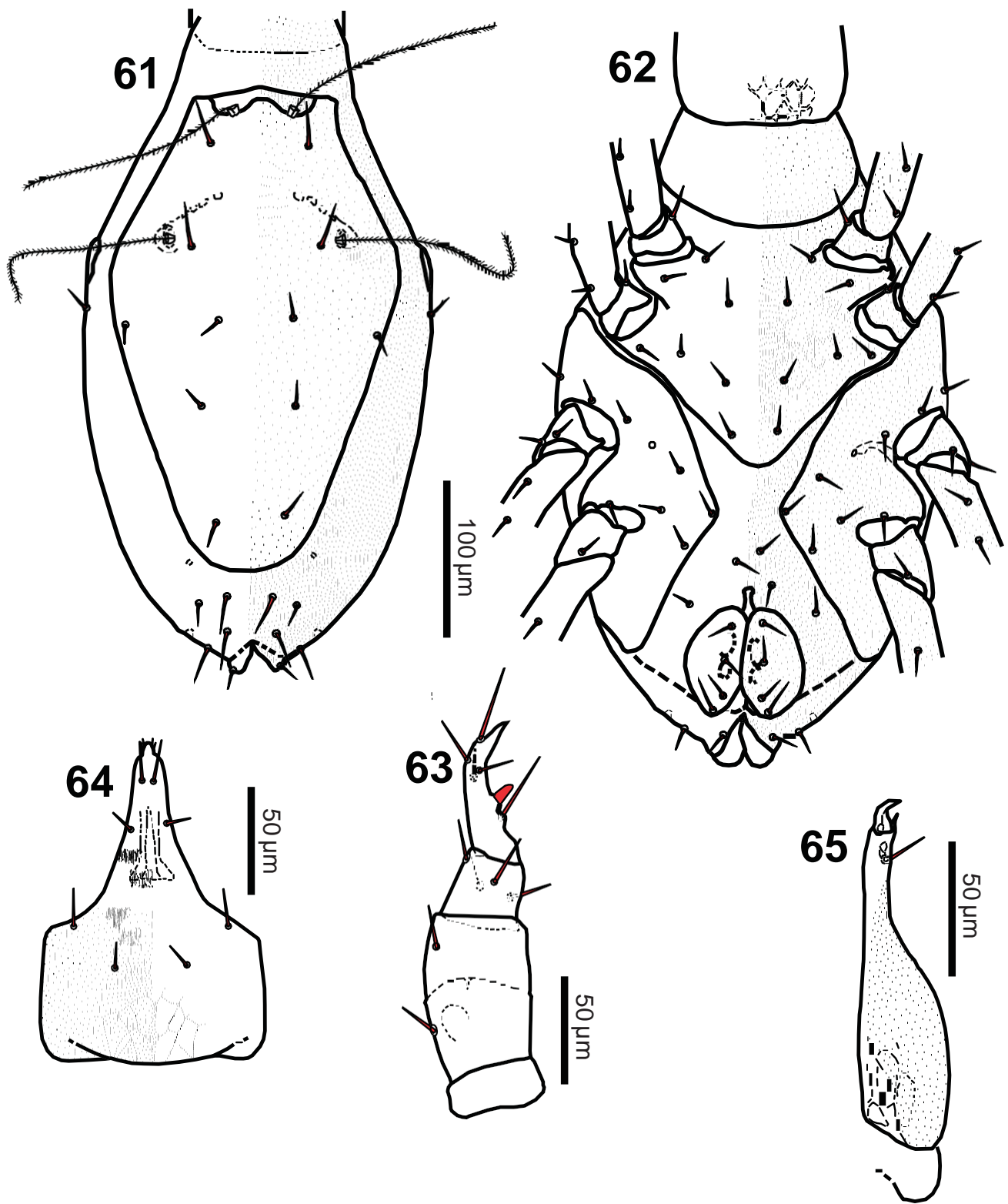
***Coleoscius buartsus* Den Heyer, 1980b  
(Figs. 49–60)**

*Coleoscius buartsus* Den Heyer, 1980b: 106.

**Diagnosis** – Although the dorsal reticulation pattern is less evident in the Iranian material it is still present. The presence of a single solenidion on genu IV in both sexes is shared with *C. tuberculatus*. The natural colour is grayish yellow to light brown. Natural form approximately diamond-shaped. Eyes as in *C. breslauensis*.



Figs. 57–60. *Coleoscius buartsus* Den Heyer, female – 57. leg I; 58. leg II; 59. leg III; 60. leg IV.



Figs. 61–65. *Coleoscirus tuberculatus* Den Heyer, female – 61. dorsal view; 62. ventral view; 63. palp; 64. hypognathum; 65. chelicera.

**FEMALE** – Dimensions: idiosoma: length 407 (385–462) width 243 (231–254); length hypognathum 162 (154–169); width hypognathum 101 (92–123); length palp 169 (162–200); length chelicera 154 (146–169); length legs: leg I 285 (270–308), leg II 270 (262–277), leg III 297 (289–308), leg IV 323 (308–347); length sensillae, *vi* 165 (154–173), *sce* 173 (154–193).

The Iranian females resemble those of the South African material but show some smaller geographical variations. The pseudoreticulation networks of papillae on the dorsal idiosomal shield (Fig. 49) and on the dorsal surface of the chelicerae (Fig. 56) are lacking in the Iranian specimens. The ventral propodogastral setae positioned medially on the posterior projection of the sternal shield (Fig. 50). Paracoxal setae on median edges of coxae IV; eight or nine hysteroastral setae. Gnathosoma (Fig. 51, Fig. 52), hypognathum (Figs. 53 and 54), palp (Fig. 55) and chelicerae (Figs. 56 and 57) as in southern African forms. Legs (Figs. 58–61), Den Heyer (1980b) in the text of his description wrongly reported 3 asl being present on genua I; however, according to his Fig. 9 it is 4. Leg chaetotaxy of Iranian specimens differs from South African material as follows: tarsi III–IV, 20 sts, 1 tsl-19 sts.

**Specimen examined** – Five females, grape vine and one female, soil under pear tree, Baneh, Kurdistan, Iran, 28 October 2003, M. Khanjani; one female, soil under plum tree, Sanandaj, 18 September 2003, M. Khanjani.

***Coleoscius tuberculatus* Den Heyer, 1978  
(Figs. 61–65)**

*Coleoscius tuberculatus* Den Heyer, 1978: 526.

**Diagnosis** – Same as South African forms but with some minor geographical variations as indicated below.

**FEMALE** – Dimensions: idiosoma: length 412 (404–420); width 274 (270–277); length hypognathum 162 (154–169); width hypognathum 120 (116–123); length palp 171 (169–173); length chelicera 160 (158–162); length legs: leg I 295 (285–300), leg II 294 (289–300), leg III 305 (293–312), leg IV 340 (331–347); length sensillae *vi* 171 (169–173), *sce* 171 (169–173). The papillae of the idiosomal dorsal shield (Fig. 61) differ somewhat in arrangement, forming short transverse to oblique strings. The venter (Fig. 62) and the gnathosomal structures (Figs. 63–65) resemble the South African forms except that the size of the ventral tubercle of the palp tibiotarsus is somewhat smaller and less prominent. The legs differ only as follows (all other setal structures similar): tarsi I possess 20 or 21 sts, tarsi III 18 or 19 sts and tarsi IV 20 sts.

**Specimens examined** – One female, soil, Ghale Shah, 20 August 2002, M. Jalaeian (accGH2); one female, soil, Jiroft, 1998, M. Jalaeian.

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