Description of the second larval species of the genus Perumaropta (Trombidiformes: Chyzeriidae) from Iran, with new host records

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Abstract

Perumaropta sibsuranensis Haddadi and Noei **sp. n.** (Trombidiformes: Chyzeriidae) is described and illustrated from larvae ectoparasitic on Gryllidae (Orthoptera) and Tenebrionidae (Coleoptera), which are new hosts for the genus from Bakhshan and Rahmatabad villages, Saravan and Sib va Suran counties, Sistan and Baluchestan province, Iran. So far, this genus has only been reported from the Nearctic biogeographic region, South American continent, Peru, with the introduction of one species. In this study, it is reported for the first time from the Palaearctic region (Iran). This is the second larval species of *Perumaropta* which is described in the world. The generic diagnosis of the genus *Perumaropta* is revised and a key to the larvae in the subfamilies of Chyzeriidae is provided.

Introduction

Based on the new classification for the terrestrial Parasitengona by Costa et al. (2024), the epifamily Trombelloidae consists of five families including Audyanidae Southcott, 1987, Trombellidae Thor, 1935, Neotrombidiidae Feider, 1955, Johnstonianidae Thor, 1935, and Chyzeriidae Womersley, 1954. The genus *Perumaropta* Haitlinger, 1999 belongs to the family Chyzeriidae and the subfamily Pteridopinae Southcott, 1987 (Mąkol and Wohltmann 2012). According to the latest revision of the subfamily Pteridopinae in 2018, this subfamily contains six genera based on larvae [L] or post larval forms [P], including *Cretessenia* Haitlinger, 1999 [L], *Parachyzeria* Hirst, 1926 [P], *Parawenhoekia* Paoli, 1937 (syn.: *Napassenia* Haitlinger, 1999) [L], *Perumaropta* Haitlinger, 1999 [L], *Pteridopus* Newell and Vercammen-Grandjean, 1964 [L], *Iberochyzeria* Mayoral, Welbourn and Barranco, 2018 [L] (Mąkol and Wohltmann 2012; Mayoral et al. 2018; Kiany et al. 2025). The genus *Perumaropta* was identified by the introduction of *P. mirsadi* Haitlinger, 1999 ectoparasitic on *Crotonotus* sp. (Orthoptera: Pseudophyllinae) [but the genus name could not be verified in the literature], from Peru, which is the only species of this genus so far (Haitlinger 1999). In this study, the second species of the genus is described and illustrated in association with Gryllidae (Orthoptera) and Tenebrionidae (Coleoptera), from Sistan and Baluchestan province, Iran. Also, the order Coleoptera and the family Gryllidae (Orthoptera) are recorded as new hosts of *Perumaropta* larvae.

Materials and methods

Insect samples were catched by hands in late winter, mid-spring and early summer from Bakhshan and Rahmatabad villages, Saravan and Sib va Suran counties, Sistan and Baluchistan province, Iran. The mite specimens were detached from the hosts by an insect pin, cleared in lactophenol solution, and mounted on microscope slides using Hoyer's medium (Walter and Krantz 2009). Figures were drawn using a BX51 Olympus microscope equipped with a drawing tube and magnification changer. Photomicrographs were taken with an AxioCam 506 color (Carl Zeiss, Germany) digital camera. Measurements (given in micrometers, µm) were calculated using a CH30 Olympus microscope. The terminology and abbreviations follow Wohltmann et al. (2007); Wohltmann and Mąkol (2012) and Robaux (1974).

RESULTS

Systematics

Superfamily Trombidioidea sensu Söller et al. (2001)

Epifamily Trombelloidae Thor, 1935

Family Chyzeriidae Womersley, 1954

Subfamily Pteridopinae Southcott, 1987

Genus *Perumaropta* Haitlinger, 1999

Type species: *Perumaropta mirsadi* Haitlinger, 1999

Diagnosis of larva (According to Mayoral et al. (2018) with some modifications):

Distal seta on coxal fields I–III setaform; scutum trapezoidal and extended at posterior level, with a naso on the anterior margin; ASens (or *vi*) anterior to AL (or *ve*); AL setae expanded (in *P. mirsadi*) or normal (*P. sibsuranensis* Haddadi & Noei **sp. n.**) and set close to the PSens (or *sci*) setae; anus with a pair of sclerites each with one or two setae.

***Perumaropta sibsuranensis* Haddadi & Noei sp. n. (Figs. 1–6)**

Diagnosis. Larva (n = 12)

AW 100–112, PW 137–155, PL 105–132, Ta I 222–240, Ti I 150–175, Ge I 120–137, Ta II 195–222, Ti II 150–170, Ge II 105–112, Ta III 237–262, Ti III 220–237, Ge III 120–140, sternal seta *2a* absent, with two pairs of anal setae.

Description. Larva (n = 12)

Dorsum (Figs. 1a, 6) Dorsal surface of idiosoma with 33 (6-6-6-6-9) barbed setae (29–32 in paratype, Table 2), each arising from a smooth sclerite. Scutum trapezoidal and sparsely punctate, with a naso, with two pairs of normal setae (AL, PL), and two pairs of sensilla (ASens and PSens); AL shorter and slightly thicker than PL, both barbed; ASens shorter than PSens, barbed in distal half and PSens nude. Posterolaterally on each side of scutum two eyes situated on a common ocular plate (53–70 × 37–40), anterior eye (diameter 27–35) larger than posterior one (diameter 22–27).

Venter (Fig. 1b) Idiosoma ventrally with one pair of barbed sternal setae (*3a*) and 36 barbed ventral setae behind coxa III (39–40 in paratypes, Table 2), and a uropore. Each ventral seta arises from a smooth sclerite. Anal plate 55 long, with one pair of barbed setae on each side. Coxa I with two barbed setae, *1a* and *1b*; coxa II with barbed seta *2b*; coxa III with seta *3b* (fn Cx 2-1-1). NDV = 33 + 36 = 69 in holotype (69–72 in paratypes, Table 2). Coxae I–III each punctate and all coxalae barbed. Supracoxal seta (*elc I*) present (8–10 long). Claparède's organs between coxae I and II, circular.

Gnathosoma (Fig. 2). Cheliceral bases punctate on dorsal surface, cheliceral base 138–175 long; cheliceral blade straight, 38–50 long, with numerous small teeth. Subcapitulum with barbed galeala (*cs*) and hypostomala (*bs*); palpfemur 63–75 and palpgenu 28–38 long, each with one barbed dorsal seta. Palptibia 33–40 with three barbed setae; palpal tibial claw bifurcate, 25–32 long; palptarsus 23–28 with 7 barbed setae, and with two eupathidia and one solenidion; fPp = 0-B-B-BBB_2-7Bωζζ. Palp supracoxal setae (*elcP*) peg-like (8–10 long).

Legs (Figs. 3, 4 and 5) Leg segmentation formula: 7-7-7; Leg setal formula (Table 1): Leg I: Ta- 1ω, 1ε, 9/10ζ, 1z, 36n; Ti- 2φ, 1κ, 8n; Ge- 1σ, 1κ, 4n; TFe- 5n; BFe- 1n; Tr- 1n; Cx- 2n. (Fig. 3a, b, c). Leg II: Ta- 1ω, 1ε, 1ζ, 33n; Ti- 2φ, 8n; Ge- 1σ, 1κ, 4n; TFe- 4n; BFe- 2n; Tr- 1n; Cx- 1n. (Fig. 4a, b, c). Leg III: Ta- 32n; Ti- 1φ, 8n; Ge- 1σ, 4n; TFe- 4n; BFe- 2n; Tr- 1n; Cx- 1n. (Fig. 5a, b, c). Tarsi with two boomerang-shaped claws and a long simple claw-like empodium. Measurements are given in Table 2.

Material examined

The holotype (ARS-20240909-2a) and paratypes (ARS-20240909-2b-2l) were collected by Kolsoom Mohammadi Bakhshani, ectoparasitic on Tenebrionidae on 8 March 2022 from Rahmatabad village, Sib va Suran county 61° 50' 59" E, 27° 15' 51" N, 1157 m a.s.l, and on Gryllidae on 12 May and 25 June 2022, from Bakhshan village, Saravan county, 62° 20' 3" E, 27° 22' 15" N, 1165 m a.s.l, Sistan and Baluchestan province, Iran.

Type deposition

The holotype and seven paratype larvae (ARS-20240909-2b, 2c, 2d, 2e, 2f, 2g, 2h) are deposited in the Acarological Collection, Zoological Museum, College of Agriculture, University of Tehran, Karaj, Iran, and four paratypes (ARS-20240909-2i, 2j, 2k, 2l) are deposited in the collection of the Department of Plant Protection, Faculty of Agriculture, University of Zabol, Zabol, Iran (DPPZ).

Etymology

The specific epithet is derived from the type locality, Sib va Suran, Sistan and Baluchestan province, Iran. Sib va Suran is one of the counties of Sistan and Baluchistan province of Iran, which has many historical and touristic attractions.

Remarks

The new species belongs to the genus *Perumaropta* Haitlinger, 1999. This genus contains only one species: *Perumaropta mirsadi* Haitlinger, 1999. *Perumaropta sibsuranensis* Haddadi and Noei **sp. n.,** differs from *P. mirsadi* in the sternal seta *2a* (absent vs. present in *P. mirsadi*), number of setae between coxae II–III (2 vs. ~10, including *3a*), shape of AL setae (normal vs. expanded), in the longer AW (100–112 vs. 80–88), PW (137–155 vs. 160–168), PL (105–132 vs. 88–92), PaScFed (88–100 vs. 66–70), *1b* (90–112 vs. 68– ~82), *2b* (87–105 vs. 80), Ti I (150–175 vs. 92–96), Ge I (120–137 vs. 92), Ti II (150–170 vs. 72–74), Ge II (105–112 vs. 74), Ti III (220–237 vs. 96–102), Ge III (120–140 vs.74–76), DS max. (130-162 vs. 114), in the shorter Ta I (222–240 vs. 300), Ta II (195–222 vs. ~240–258), Ta III (237–262 vs. 304), *bs* (32–47 vs. ~76– ~82), fD (29–33 vs. 28).

Discussion

The monotypic genus *Perumaropta* was established by Haitlinger (1999) with the description of *P. mirsadi* Haitlinger, 1999 from Peru in the South America (Neotropical region). The discovery and description of the new species, from Iran in the present study, expanded the distribution of this genus into the Asian continent (Palearctic region). Distribution of *Perumaropta* species in Iran considering world fauna, so there may be many more species to be discovered/or highly evolved taxa housed within the allied genera.

Considering the known host association of the newly described species, the host spectrum of the *Perumaropta* species is expanded to Coleoptera (Tenebrionidae) and the family Gryllidae (Orthoptera), which both host associations were unknown until the current evidence achieved during our studies and reported for the first time in the world. As a result of the new morphological data observed, including shape of scutum (posterior margin of scutum concave), absence of the sternal seta *2a*, shape of AL setae, two setae between coxae II–III, and two setae on each anus sclerite, the generic diagnosis for *Perumaropta* of Mayoral et al. (2018) is amended. Also, we observed seven barbed setae with two eupathidia and one solenidion on palptarsus in the new species, while Haitlinger (1999) has pointed out the existence of only eight barbed setae, which more studies need to be done about the type specimens of *P. mirsadi*.

Key to the larvae in the subfamilies of Chyzeriidae (Based on Mayoral et al. 2018)

1. Cheliceral blades without numerous small teeth, with four pairs of setae on scutum.....
..... Ralphaudyaninae, Southcott, 1987

(including *Ralphaudyna*, *Gryllochyzeria*)

- Cheliceral blades with numerous small teeth on at least one surface, with three or four pairs of setae on scutum 2

2. With three pairs of setae on scutum..... Chyzeriinae, Womersley, 1954

(Including *Chyzeria*, *Nothotrombicula*)

- With four pairs of setae on scutum..... Pteridopodinae, Southcott, 1987

(Including *Cretessenia, Parawenhoekia*, *Perumaropta, Pteridopus*, *Iberochyzeria*)

The two known species of *Perumaropta* larvae may be separated as follows:

1. Sternal seta *2a* absent, with two pairs of anal setae, Ti III 220–237, Ge III 120–140, AW 100–112 *P. sibsuranensis* Haddadi and Noei **sp. n.**

- Sternal seta *2a* present, with one pair of anal setae, Ti III 96–102, Ge III 74–76, AW 80–88.....

..... *P. mirsadi* Haitlinger, 1999

Declarations

Conflict of interest

The authors declare that there is no conflict of interest.

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Tables

Table 1. Leg chaetotaxy of *Perumaropta sibsuranensis* Haddadi and Noei **sp. n**. (larva). 2a, holotype and 2b–2l paratypes.

Character	2a	2b	2c	2d	2e	2f	2g*
Ta I	1ω, 1ε, 9/10ζ, 1z, 36n	1ω, 1ε, 10/9ζ, 1z, 34/36n	1ω, 1ε, 10ζ, 1z, 32/40n	1ω, 1ε, 10ζ, 1z, 36n	1ω, 1ε, 10/9ζ, 1z, 39/36n	1ω, 1ε, 9/10ζ, 1z, 38/37n	1ω, 1ε, 10ζ, 1z, 32/35n
Ti I	2φ, 1κ, 8n	2φ, 1κ, 8n	2φ, 1κ, 8n	2φ, 1κ, 8n	2φ, 1κ, 8n	2φ, 1κ, 8n	2φ, 1κ, 8n
Ge I	1σ, 1κ, 4n	1σ, 1κ, 4n	1σ, 1κ, 4n	1σ, 1κ, 4n	1σ, 1κ, 4n	1σ, 1κ, 4n	1σ, 1κ, 4n
TFe I	5n	5n	5n	5n	5n	5n	5n
BFe I	1n	1n	1n	1n	1n	1n	1n
Tr I	1n	1n	1n	1n	1n	1n	1n
Cx I	2n	2n	2n	2n	2n	2n	2n
Ta II	1ω, 1ε, 1ζ, 33n	1ω, 1ε, 1ζ,33n	1ω, 1ε, 1ζ, 32n	1ω, 1ε, 1ζ, 33n/broken	1ω, 1ε, 1ζ, 34/31n	1ω, 1ε, 1ζ, 33n	1ω, 1ε, 1ζ, 32n
Ti II	2φ, 8n	2φ, 8n	2φ, 8n	2φ, 8n/broken	2φ, 8n	2φ, 8n	2φ, 8n
Ge II	1σ, 1κ, 4n	1σ, 1κ, 4n	1σ, 1κ, 4n	1σ, 1κ, 4n	1σ, 1κ, 4n	1σ, 1κ, 4n	1σ, 1κ, 4n
TFe II	4n	4n	4n	4n	4n	4n	4n
BFe II	2n	2n	2n	2n	2n	2n	2n
Tr II	1n	1n	1n	1n	1n	1n	1n
Cx II	1n	1n	1n	1n	1n	1n	1n
Ta III	32n	31/30n	30n	32/33n	32n	32n	32n
Ti III	1φ, 8n	1φ, 8n	1φ, 8n	1φ, 8n	1φ, 8n	1φ, 8n	1φ, 8n
Ge III	1σ, 4n	1σ, 4n	1σ, 4n	1σ, 4n	1σ, 4n	1σ, 4n	1σ, 4n
TFe III	4n	4n	4n	4n	4n	4n	4n
BFe III	2n	2n	2n	2n	2n	2n	2n
Tr III	1n	1n	1n	1n	1n	1n	1n
Cx III	1n	1n	1n	1n	1n	1n	1n

Character	2h	2i	2j	2k	2l
Ta I	1ω,1ε, 10ζ, 1z, 36n	1ω,1ε, 10ζ, 1z, 36n	1ω,1ε, 10/9ζ, 1z, 34/36n	1ω,1ε, 10ζ, 1z, 36/35n	1ω,1ε, 10ζ, 1z, 35/34n
Ti I	2φ, 1κ, 8n	2φ, 1κ, 8n	2φ, 1κ, 8n	2φ, 1κ, 8n	2φ, 1κ, 8n
Ge I	1σ, 1κ, 4n	1σ, 1κ, 4n	1σ, 1κ, 4n	1σ, 1κ, 4n	1σ, 1κ, 4n
TFe I	5n	5n	5n	5n	5n
BFe I	1n	1n	1n	1n	1n
Tr I	1n	1n	1n	1n	1n
Cx I	2n	2n	2n	2n	2n

Ta II	1ω, 1ε, 1ζ, 33n	1ω, 1ε, 1ζ, 32n	1ω, 1ε, 1ζ, 33n	1ω, 1ε, 1ζ, 33n	1ω, 1ε, 1ζ, 33n
Ti II	2φ, 8n	2φ, 8n	2φ, 8n	2φ, 8n	2φ, 8n
Ge II	1σ, 1κ, 4n	1σ, 1κ, 4n	1σ, 1κ, 4n	1σ, 1κ, 4n	1σ, 1κ, 4n
TFe II	4n	4n	4n	4n	4n
BFe II	2n	2n	2n	2n	2n
Tr II	1n	1n	1n	1n	1n
Cx II	1n	1n	1n	1n	1n
Ta III	32n	32n	32n	Broken	Broken
Ti III	1φ, 8n	1φ, 8n	1φ, 8n	Broken	Broken
Ge III	1σ, 4n	1σ, 4n	1σ, 4n	Broken	1σ, 4n
TFe III	4n	4n	4n	4n	4n
BFe III	2n	2n	2n	2n	2n
Tr III	1n	1n	1n	1n	1n
Cx III	1n	1n	1n	1n	1n

* The placement of ε has changed in the left tarsus I and ε is placed before ω.

Table 2. Metric and some meristic data of *Perumaropta sibsuranensis* Haddadi and Noei **sp. n.** (larva). 2a, holotype; 2b–2l, paratypes.

Character	2a	2b	2c	2d	2e	2f	2g	2h	2i	2j	2k	2l	Range	*P. mirsadi* N=2
IL	620	~1000	630	700	~1000	~700	~660	490	850	560	~1000	~700	490–~1000	444–926
IW	380	-	450	550	~700	~530	~400	340	560	370	~800	~600	340–~800	343–843
AW	112	112	100	105	107	112	107	107	112	112	112	112	100–112	80–88
PW	145	150	145	150	150	147	137	137	150	150	155	150	137–155	160–168
GL	200	137	-	200	150	160	145	150	160	167	162	150	137–200	156–164
ASB+naso	105	102	-	112	110	107	100	112	-	-	100	100	100–112	-
PSB	60	-	-	72	67	65	62	62	67	60	62	67	60–72	-
SD+naso	165	-	-	184	177	172	162	174	-	-	162	167	162–184	124–~126
Naso	57	57	Broken	59	57	62	65	64	Broken	Broken	62	57	57–65	-
W	202	182	180	187	190	190	182	187	187	-	187	200	180–202	196
AP	50	50	50	52	50	42	50	50	47	50	50	50	42–52	46
ASens	90	90	77	95	90	80	90	87	92	85	82	85	77–95	~ 76
PSens	215	200	192	162	177	187	200	162	200	-	162	187	162–215	~158–182
AL	87	82	75	87	75	75	80	80	87	80	80	77	75–87	70–76
PL	120/112	115	105	132	112	125	112	122	127	105	115	105	105–132	88–92
SBa	25	18	22	25	25	25	22	22	22	25	22	22	18–25	16–20
SBp	47	45	57	50	50	52	50	50	50	50	50	47	45–57	50–52
DS min.	77	75	68	85	75	77	75	87	82	-	77	82	68–87	72
DS max.	155	138	130	162	162	162	142	150	145	-	145	157	130–162	110-114
PDS	125/152	137	108	-	-	-	-	-	145	137	140	-	108–152	-
cs	37	32	30	37	35	27	30	30	27	30	32	35	27–37	-
bs	42	35	37	47	35	37	37	32	45	Broken	33	40	32–47	~76–~82
PaScFed	95	88	100/90	92	95	90	92	90	97	87	87	90	88–100	66–70
PaScGed	57	63	53	62	55	65	62	60	67	60	57	57	53–67	52
ISD	35	37	30	37	37	32	32	30	47	35	47	35	30–47	34–36
3a	75	-	70	80	-	77	74	67	70	75	67	80	67–80	~40
1a	92	87	80	92	87	92	87	87	87	62	90	97	62–97	92–~94
1b	102	92	95	100	92	95	100	105	102	112	90	97	90–112	68–~82
2b	97	90	90	102	87	87	105	100	87	100	100	97	87–105	80 (1)
3b	77	80	70	82	72	70	67	75	75	80	85	80	67–85	76 (1)
Ocp	62	67	62	65	62	62	62	62	62	60	62	65	60–67	58–60
Crn I	30	27	27	32	27	27	27	30	32	30	30	27	27–32	26

Crn II	22/25	25	22	27	25	25	25	25	25	25	25	22	22–27	26
Ta I (L)	227	225	222	230	237	240	225	225	225	225	225	230	222–240	300
TaI (H)	32	27	32	30	25	27	27	25	27	30	30	30	25–32	-
Ti I	162	172	150	175	165	165	150	150	160	170	170	160	150–175	92–96
Ge I	120	135	125	130	127	127	122	125	125	137	130	120	120–137	92
TFe I	100	87	100	100	100	97	95	100	105	100	100	100	87–105	84
BFe I	87	100	87	90	80	90	82	82	82	87	80	90	80–100	64–72
Tr I	87	80	75	82	75	87	70	87	75	75	80	60	60–87	64–66
Cx I	142	137	132	137	140	132	125	127	125	100	100	135	100–142	94–96
Leg I	925	936	891	944	924	938	869	896	897	894	885	895	869–944	792–804
Ta II (L)	222	212	195	212	212	207	197	202	215	207	207	200	195–222	~240–258
Ta II (H)	32	27	30	30	27	27	27	27	25	32	30	30	25–32	-
Ti II	162	167	155	162	165	160	150	150	162	170	160	160	150–170	72–74
Ge II	112	112	110	112	110	112	100	105	110	110	110	110	105–112	74
TFe II	100	90	92	95	100	97	97	92	100	97	90	100	90–100	76–82
BFe II	87	87	85	87	87	87	75	80	82	87	90	80	75–90	56–60
Tr II	97	87	100	87	100	90	75	87	75	95	80	75	75–100	56–60
Cx II	133	125	125	125	137	125	125	127	112	125	100	110	100–137	80
Leg II	913	880	862	880	911	878	819	843	856	891	837	835	819–913	678–792
Ta III (L)	262	257	-	252	252	262	237	237	250	250	Broken	Broken	237–262	304 (1)
Ta III (H)	27	25	25	25	25	25	25	25	25	27	Broken	Broken	25-27	-
Ti III	237	237	-	222	232	230	220	232	230	237	Broken	Broken	220–237	96–102
Ge III	130	132	125	127	127	125	120	132	125	125	130	140	120–140	74–76
TFe III	130	122	117	125	115	120	122	130	127	130	130	130	115–130	92–100
BFe III	115	112	105	122	122	122	115	117	120	122	120	110	105–122	80–84
Tr III	117	107	100	105	100	112	87	105	90	97	110	90	87–117	68–74
Cx III	145	125	125	125	100	130	125	117	112	122	110	120	100–145	100–104
Leg III	1136	1092	-	1078	1048	1101	1026	1070	1054	1083	-	-	1026–1136	834 (1)
IP	2974	2908	-	2902	2883	2917	2714	2809	2807	2868	-	-	2714–2974	2430 (1)
fD	33	-	29	-	-	-	30	-	32	32	-	-	29–33	28
fV	36	-	40	-	-	-	39	-	40	40	-	-	36–40	~38*

NDV	69	-	69	-	-	-	69	-	72	72	-	-	69–72	~66

Ocp- length of ocular plate, Crn I- across of anterior cornea, Crn II- across of posterior cornea.

*Excluding *3a*.

Figures

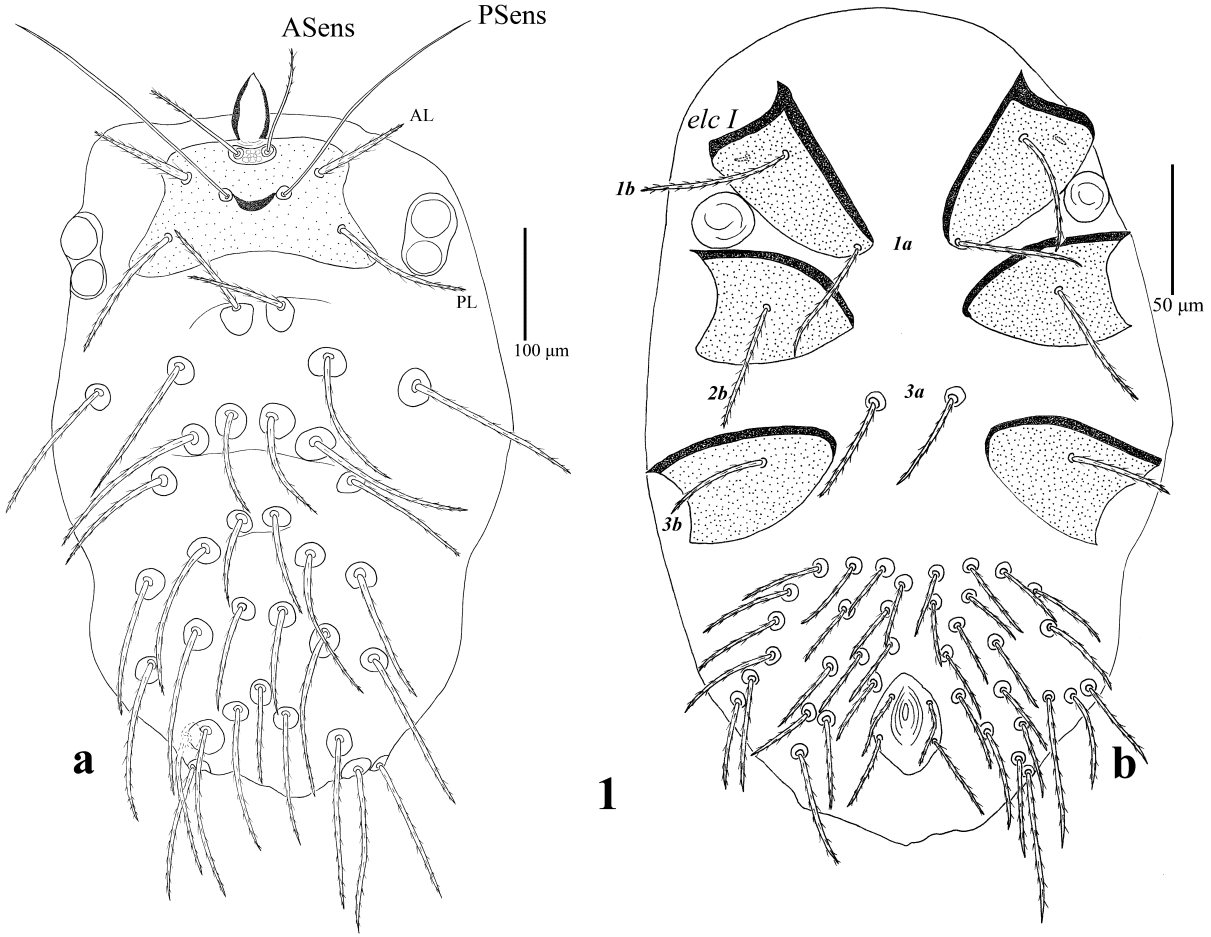

Figure 1

Perumaropta sibsuranensis Haddadi and Noei **sp. n.** larva. a. Dorsal view of idiosoma; b. Ventral view of idiosoma.

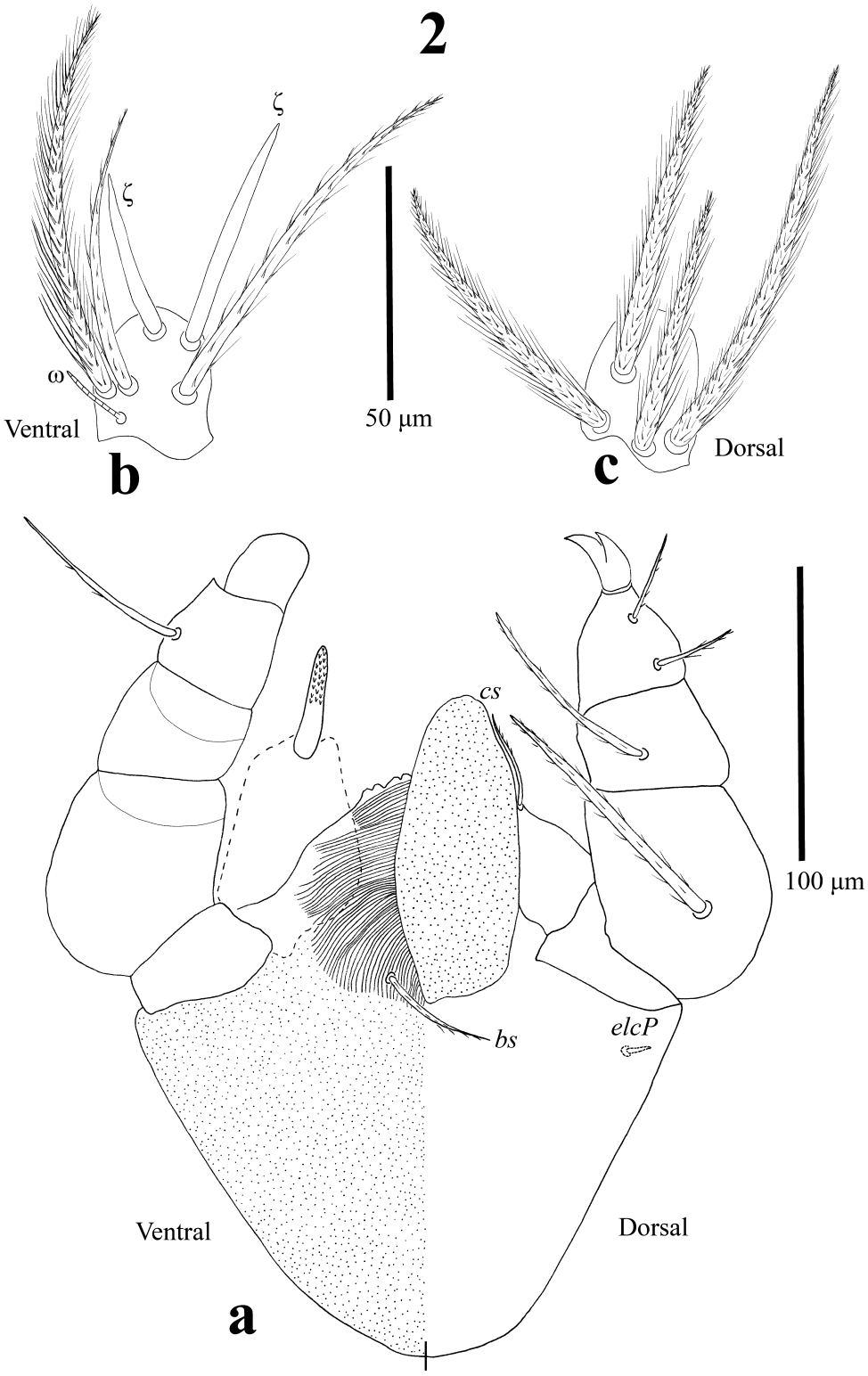

Figure 2

Perumaropta sibsuranensis Haddadi and Noei **sp. n.** larva. a. Gnathosoma, ventral (left) and dorsal (right) view; b. Palptarsus, ventral view; c. Palptarsus, dorsal view.

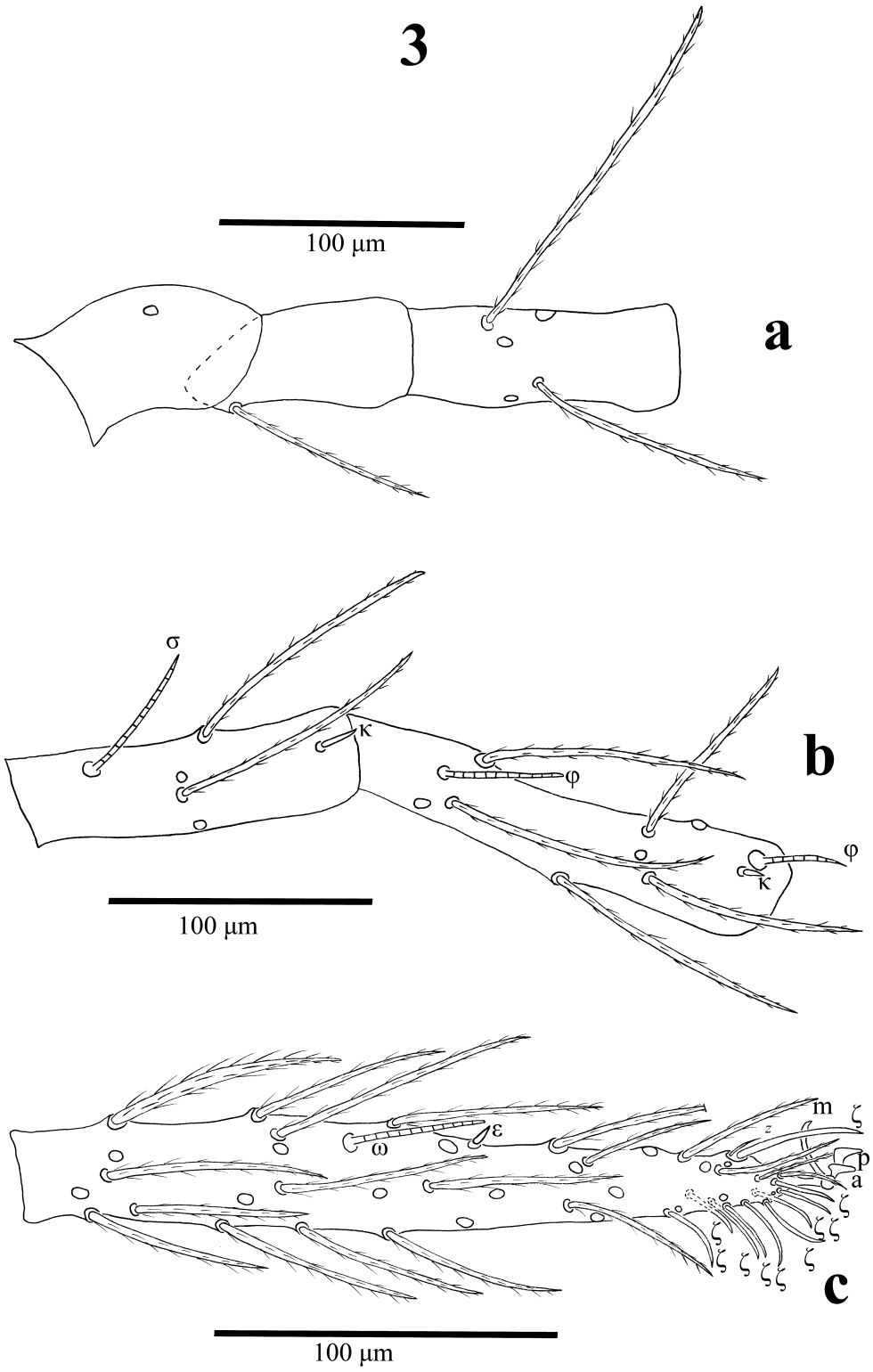

Figure 3

Perumaropta sibsuranensis Haddadi and Noei **sp. n.** larva. Leg I: a. Tr–TFe; b. Ge–Ti; c. Ta.

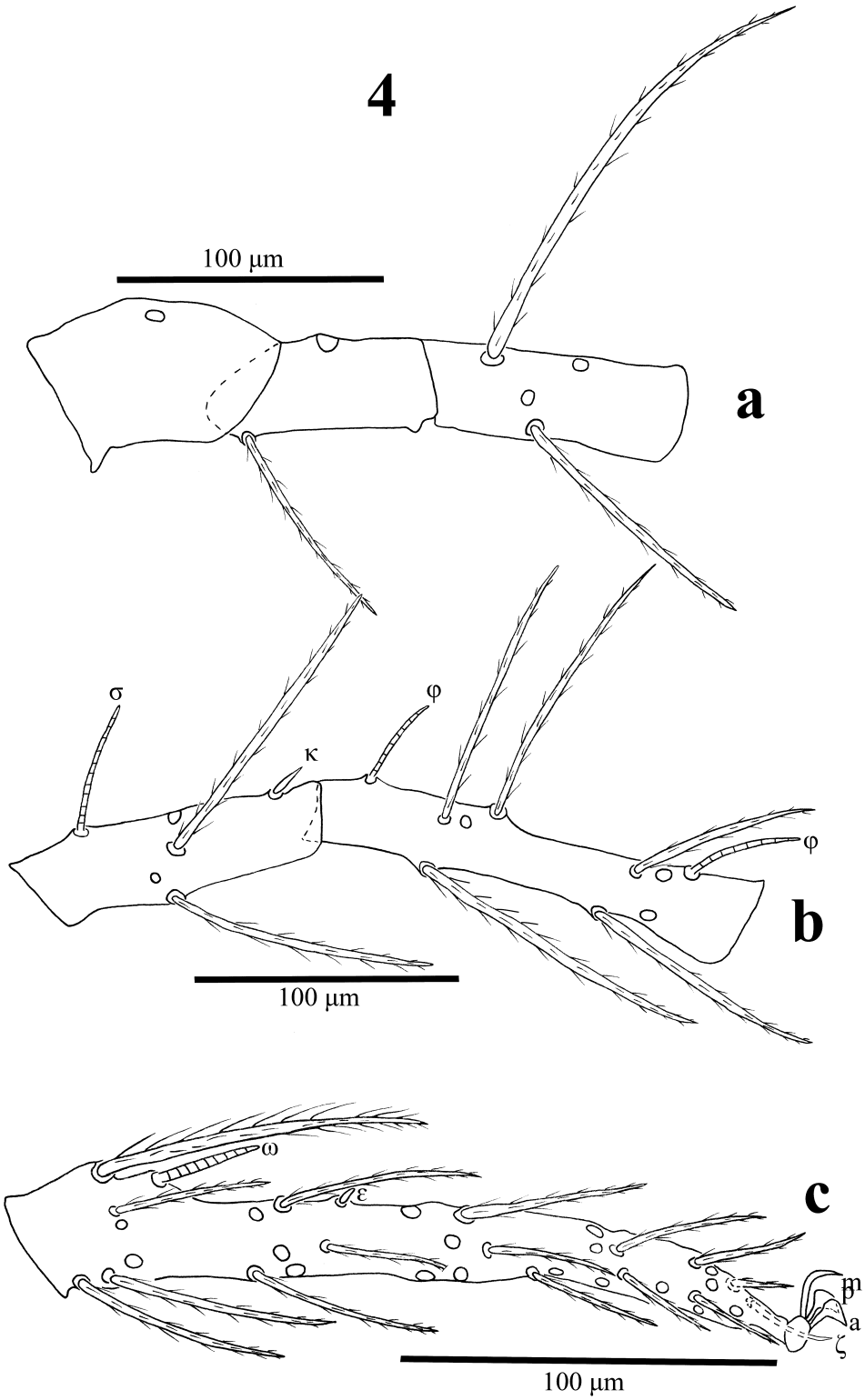

Figure 4

Perumaropta sibsuranensis Haddadi and Noei **sp. n.** larva. Leg II: a. Tr–TFe; b. Ge–Ti; c. Ta.

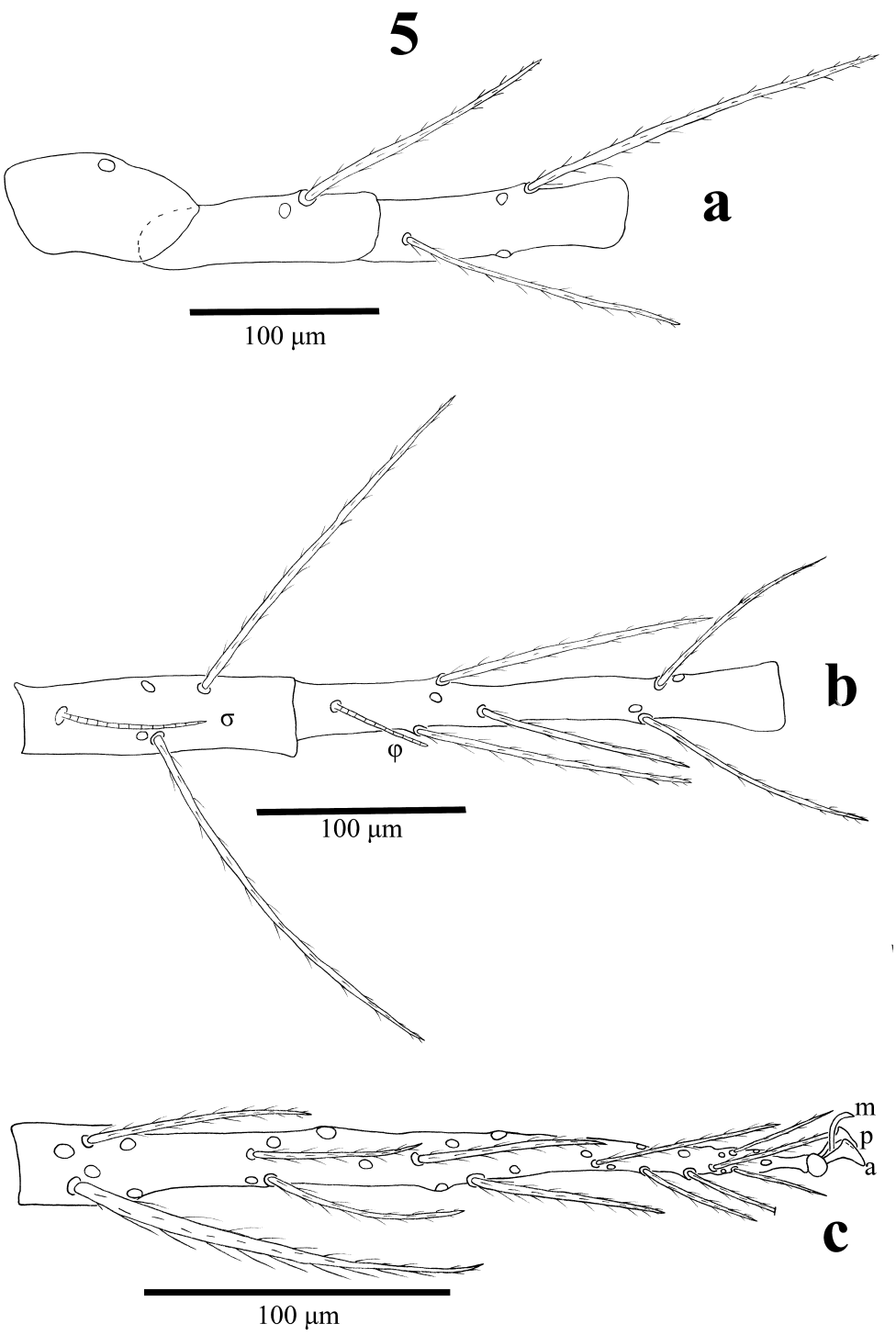

Figure 5

Perumaropta sibsuranensis Haddadi and Noei **sp. n.** larva. Leg III: a. Tr–TFe; b. Ge–Ti; c. Ta.

Figure 6

Perumaropta sibsuranensis Haddadi and Noei **sp. n.** (larva). Microphotograph of scutum in one paratype (ARS-20240909-2c).