

DESCRIPTION OF A NEW SPECIES OF *ANOPLOCHEYLUS* BERLESE, 1910 (ACARI: TROMBIDIFORMES: PSEUDOCHEYLIDAE) FROM IRAN

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ABSTRACT — A new species of *Anoplocheylus* Berlese 1910 (Acari: Trombidiformes: Pseudocheylidae), *A. bonabjadidiensis* n. sp. is described and illustrated. In this species, the length of the claviform sensillae is similar to length of the pair setae between them, whereas in related species, the claviform sensillae are up to twice of the length of the pair setae between them.

KEYWORDS — Acari; Pseudocheylidae; *Anoplocheylus*; new species; Iran

INTRODUCTION

Members of the family Pseudocheylidae are thought to be predators; they are found under tree bark, in litter and moss (Walter *et al.* 2009) and sometimes in soil (Van Dis and Ueckermann 1991). They differ from the other families of Trombidiformes by the large tarsi terminating into stalked, annulated pretarsi bearing a pliable empodium with claws absent or when present, inconspicuous (Ueckermann and Khanjani 2004). Ueckermann and Khanjani (2004) revised the genus *Anoplocheylus* Berlese with descriptions of two new species and re-descriptions of four known species. They also showed that the number of setae on the palpfemur is the best reliable character to distinguish between the different stages, backed by number of setae on prodorsal shield, presence or absence of

genital and aggenital setae and genital opening. To date, *Anoplocheylus* contains 9 species with 2 species, *A. tauricus* and *A. malayeriensis*, reported from Iran. In this paper we added another species to this genus.

MATERIALS AND METHODS

The litter and soil samples were taken from apple orchards at Marand, East Azerbaijan Province, Iran. Mites were extracted from the soil using a Berlese funnel; mites were collected in 70 % ethanol, cleared in Nesbitt's fluid and mounted on microscope slides using Hoyer's medium. Body length was taken from the gnathosoma to posterior end of hysterosoma and width was measured at the broadest part of the idiosoma. The terminology and abbreviations

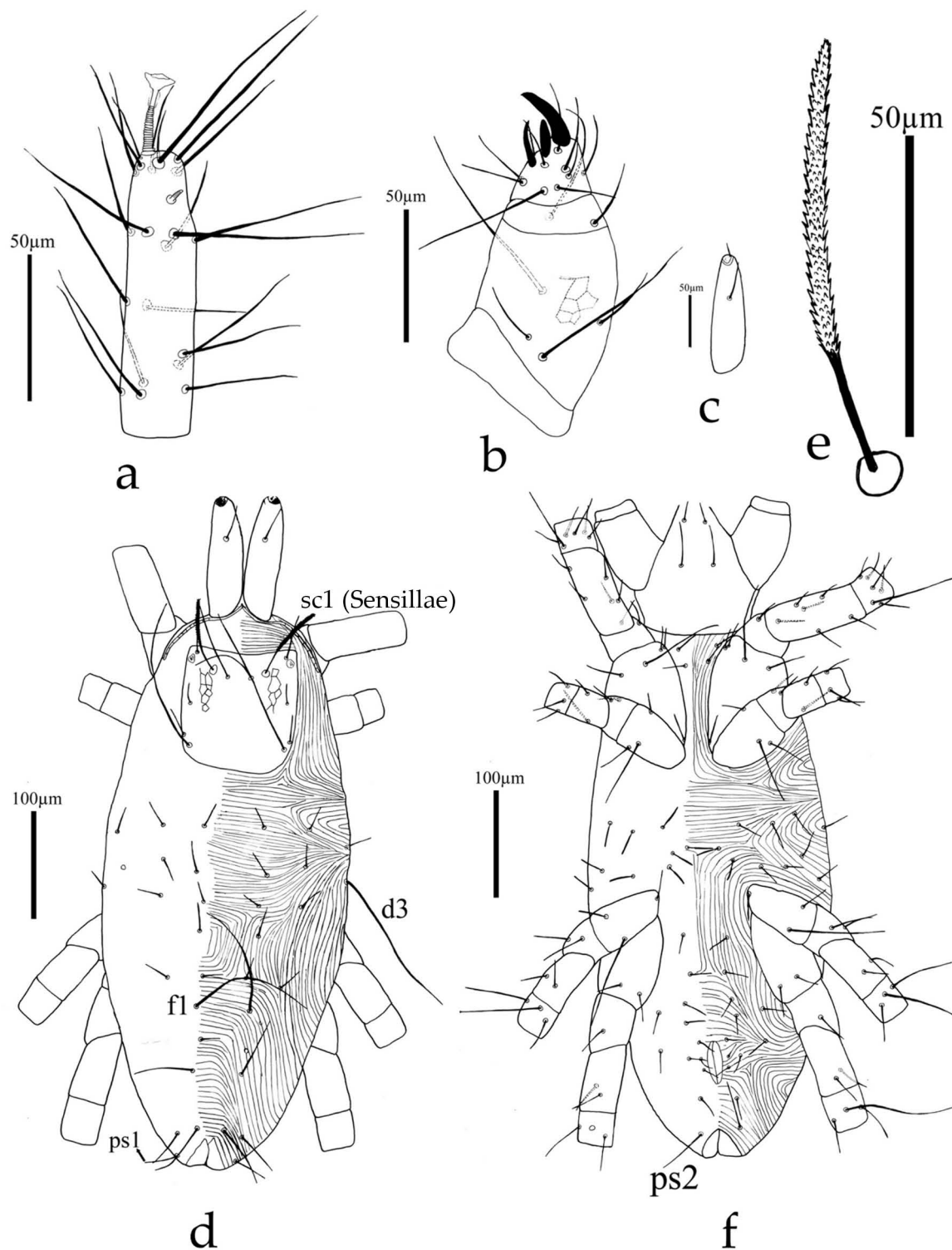


FIGURE 1: *Anoplocheylus bonabjadiensis* (Female): a - Pretarsus I, b - Palp, c - Chelicera, d - Dorsal view of body, e - Sensillae, f - Ventral view of body.

follow Kethley (1990). All measurements are given in micrometers (μm).

GENUS *Anoplocheylus* BERLESE, 1910

Type species- *Anoplocheylus europaeus* Berlese, 1910

Diagnosis — Peritremes in soft cuticle connecting gnathosoma and idiosoma, completely or partly chambered; legs with pretarsi stalked, annulated, bearing a pliable empodium without claws (Figure 1a) (Ueckermann and Khanjani 2004).

Anoplocheylus bonabjadidiensis Navaei-Bonab
n. sp.
(Figures 1-2)

Female ($n = 2$) — Measurements of holotype (measurements of paratype in parentheses): length of body (including gnathosoma) 650 (580), (excluding gnathosoma) 525 (440), width 225 (205); length of leg I 460 (465), leg II 270 (250), leg III 355 (305), leg IV 440 (405).

Gnathosoma (Figure 1b, c) — Subcapitulum with 4 pairs of setae, subcapitular setae much

longer than adoral setae; chelicerae not fused and each with 2 setae, proximal seta 35 (31) long; palp 4-segmented, trochanter and coxa fused; femur with 4 simple setae; short genu with 2 setae; tibiotarsus with terminal claw, 2 subapical spurs, 1 falcate seta and 9 simple setae.

Dorsum (Figure 1d) — Peritremes in membrane connecting gnathosoma and idiosoma with distal half chambered; prodorsal shield with one pair of claviform sensillae (Figure 1e) 70 (65) long and five pairs of simple setae with posterior pair very long 145 (150); length of setae between sensillae 70 (65); hysterosoma striated and with 17 pairs of setae with setae *d3* 150 (145) and (*fl*) 120 (131) very long.

Venter (Figure 1f) — With 15 pairs of subequal setae; with 2 pairs of setae between coxae I; 3 pairs of aggenital setae plus 3 pairs of genital setae; pseudanal shields terminal and with 2 pairs of pseudanal setae, one pair (*ps1*) dorsal and other pair (*ps2*) ventral; length of *ps1* 23 (21) and *ps2* 52 (50).

Legs (Figure 2) — legs with pretarsi stalked, annulated, bearing a pliable empodium without claws; chaetotaxy of leg segments as follows (solenidia and seta κ included): tarsi 22(ω)-8(ω)-9-

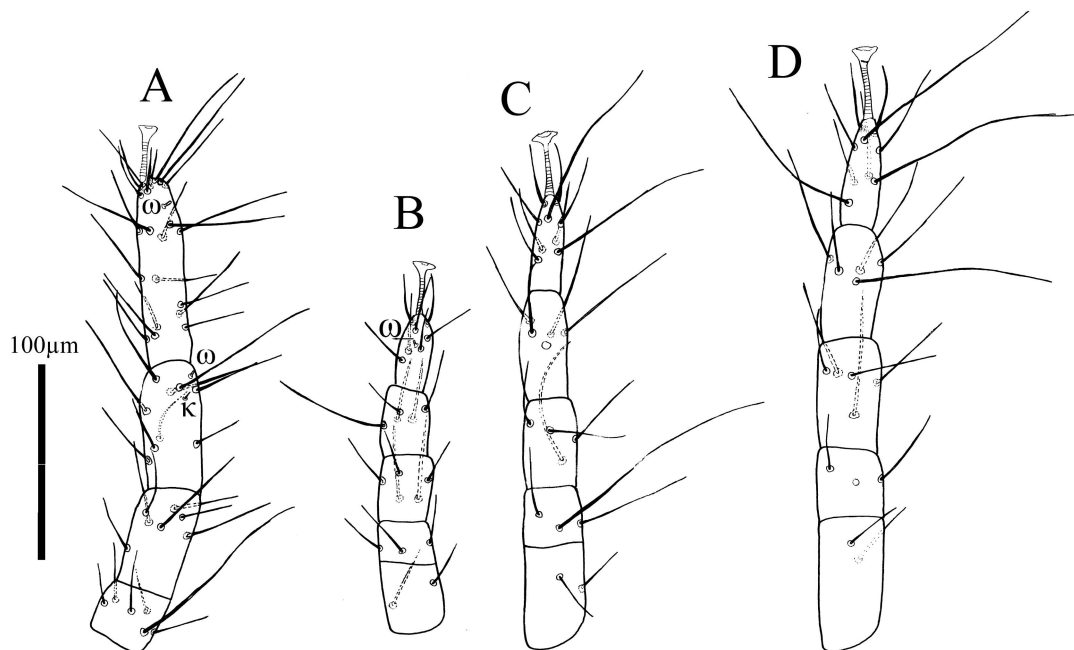


FIGURE 2: A – Leg I; B – Leg II; C – Leg III; D – Leg IV.

9, tibiae 11(ω , κ)-5-5-5, genua 7-5-4-5, telofemora 6-3-3-3, basifemora 6-2-2-2, trochanters 1-2-2-1, coxae 4-3-3-2.

Etymology — This species is named after the town, Bonab-E-Jadid, where it was collected.

Other stages — Unknown

Type material — Holotype female and one paratype female were collected from soil under apple trees of Marand, East Azerbaijan province, 4 August, 2009, by Reza Navaei-Bonab. Holotype is deposited in the mite collection of the ARC-Plant Protection Research Institute, Pretoria, South Africa. The paratype is deposited in the Collection of the Acarology Laboratory, University of Maragheh, Maragheh, Iran.

Differential diagnosis — *Anoplocheylus bonabjaddi* closely resembles *A. malayeriensis* Ueckermann and Khanjani 2004 and *A. clavatus* Baker and Atyeo 1964 in having setae (*sc1*) claviform and 5 pairs of simple setae on prodorsal shield; *d3*(?) and *f1*(?) the longest hysterosomal setae and at least 15 pairs of seta on hysterosoma.

However, *A. bonabjaddi* can be distinguished from *A. clavatus* by:

1. sensillae claviform slender vs. broad in *A. clavatus*;
2. sensillae as long as pair of setae between them vs. twice as long in *A. clavatus*;
3. proximal setae 35 (31) long vs. 44 – 47 in *A. clavatus*.

also, the new species can be distinguished from *A. malayeriensis* by:

1. sensillae claviform as long as pair of setae between them vs. less than twice its length in *A. malayeriensis*;
2. length of *f1* on posterior third of hysterosoma 120 (131) vs. 69 long *A. malayeriensis*;
3. proximal setae 35 (31) long vs. 44 – 47 in *A. malayeriensis*;
4. length of humeral setae (*d3*) 150 (145) vs. 120-125 in *A. malayeriensis*;

5. leg chaetotaxy, except for coxae and telofemora, also differs in these two species.

In the new species tarsus II, tibia IV, genu IV, basifemora I-III and trochanter II with 8, 5, 5, 6, 2, 2 and 2 setae (included solenidia) vs. 9, 6 or 7, 4, 8, 3, 3 and 1 setae in *A. malayeriensis*.

Key to species of *Anoplocheylus* Berlese (Based on Ueckermann and Khanjani 2004)

1. Palptibia with 2 subapical spurs 2
— Palptibia with 1 subapical spur.....
..... *A. europaeus* Berlese
2. Anterior sensillae simple 6
— Anterior sensillae claviform 3
3. Prodorsal shield with 5 pairs of setae.....
..... *A. paraclavatus* Van Dis and Ueckermann
— Prodorsal shield with 6 pairs of setae 4
4. Claviform sensillae as long as length of pair of setae between them; number of setae on trochanters I-IV: 1-2-2-1
..... *A. bonabjaddi* Navaei-Bonab **n. sp.**
— Claviform sensillae, twice or less than twice length of pair of setae between them; number of setae on trochanters I-IV: 1-1-2-1.....5
5. Claviform sensillae broad, twice length of pair of setae between them; long dorsal setae on posterior third of hysterosoma 129 long.....
..... *A. clavatus* Baker and Atyeo
— Claviform sensillae slender, less than twice length of pair of setae between them, long dorsal setae on posterior third of hysterosoma 69 long.....
..... *A. malayeriensis* Ueckermann and Khanjani
6. Tarsus III with a solenidion 7
— Tarsus III without a solenidion 8
7. Most dorsal setae very short, 2 long posterior setae on prodorsal shield shorter than distances to sensillae.....
..... *A. brevisetosus* Ueckermann and Khanjani

— Most dorsal setae as long as distances to setae next behind, hysterosoma with 4 pairs of long to very long setae, 2 long posterior setae on prodorsal shield much longer than distances to sensillae.....
.....*A. tellustrus* Van Dis and Ueckermann

8. Pair of long posterior setae on prodorsal shield as long as or slightly shorter than distances to sensillae, hysterosoma with a pair of humeral setae and 4 caudal setae clearly longer than rest of hysterosomal setae *A. transiens* Delfinado and Baker
— Posterior pair of long setae on prodorsal shield much longer, hysterosoma with an additional pair of long setae dorsomedially on posterior third....9

9. Anal setae *ps1* (28 – 35) much shorter than *ps2* (41 – 54); coxa IV with 4 setae.....
A. aegypticus Baker and Atyeo *A. protea* (Womersley)
— Anal setae subequal; coxa IV with 3 setae.....
.....*A. tauricus* Livshitz and Mitrofanov

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