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Additional descriptions of *Ameroseius aegyptiacus* (NASR & ABOU-AWAD) and *Ameroseius lanceosetis* LIVSHITZ & MITROFANOV (Acari: Ameroseiidae), with a revised key to the ameroseiid mites of Iran

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Abstract: After comparison with the original description of *Ameroseius aegyptiacus* (NASR & ABOU-AWAD, 1986) from Egypt, we herein provide an expanded description, including illustrations for the adult female. Male of *Ameroseius aegyptiacus* and *Ameroseius lanceosetis* LIVSHITZ & MITROFANOV, 1975 are described for first time based on the Iranian material. A revised identification key to the 22 mite species of Ameroseiidae recorded from Iran is also provided.

Key words: Mesostigmata, ameroseiid mites, male description, species key.

Introduction

The Ameroseiidae (Acari: Mesostigmata) comprises 148 species of mites placed in 10 genera (BEAULIEU et al. 2011) which are known to feed on pollen, nectar and fungi (BAKER & DELFINADO BAKER 1985, SEEMAN & WALTER 1995, HALLIDAY 1997). *Ameroseius aegyptiacus* (NASR & ABOU-AWAD) was described by NASR & ABOU-AWAD (1986) based on female specimens collected from Egypt. Although NASR & ABOU-AWAD (1986) put the species *aegyptiacus* in genus *Sertitympanum* ELSEN & WHITAKER but this species don't have main characteristics of this genus include of presence of triple cog-wheel-like structures on sternal shield and strongly sculptured dorsal shield that prolonged forwards by a bifid spur supporting setae j1 (ELSEN & WHITAKER, 1985). For these reasons, we think that this species is belong to genus *Ameroseius* and sugenus *Kleemannia* OUDEMANS. *Ameroseius aegyptiacus* have main characteristics of subgenus *Ameroseius* (*Kleemannia*) such as genu III with two *pl* setae, two-tined palp apotele and ventrianal shield with 1-2 pairs of preanal and three circum-anal setae. *Ameroseius lanceosetis* LIVSHITZ & MITROFANOV was described by LIVSHITZ & MITROFANOV (1975) and redescribed by HAJIZADEH et al. (2013a) based on female specimens respectively collected from Ukraine and Iran.

Compared to the other mite families of Iran, the fauna of the Ameroseiidae is the well known. A checklist and an identification key were provided for the 18 species of Ameroseiidae in Iran (HAJIZADEH et al. 2013a). During 2013 to date 7 another species of ameroseiid mites *Ameroseius furcatus*, *Ameroseius ornatus*, *Ameroseius pseudoplumosus*, *Ameroseius delicatus*, *Ameroseius ulmi*, *Epicriopsis palustris* and

Epicriopsis baloghi were recorded from Iran (HAJIZADEH et al., 2013b; KAZEMI & RAJAEI 2013; NEMATI et al., 2013; KHALEGHABADIAN et al., 2014; KHALILI-MOGHADAM & SABOORI 2016a, b). According to KHALILI-MOGHADAM & SABOORI (2014) *Ameroseius bassolase* sensu SOLEIMANI et al. (2011) is a misidentification of *Sertitympanum aegyptiacus*. The *Neocyphophylax rotundus* and *Ameroseius ornatus* (both species are known from Australia) are regarded as doubtful identification for ameroseiid mites fauna of Iran (HAJIZADEH et al. 2013a).

In this paper, we describe and illustrate the adult female of *Ameroseius aegyptiacus* and compared our specimens to the description of the type material; males of *A. aegyptiacus* and *Ameroseius lanceosetis* described for first time based on material collected from Guilan Province, Iran. A revised identification key for the 22 species of Ameroseiidae recorded in Iran is provided. Twelve species of Ameroseiidae are reported from Guilan Province, Iran, including four new records.

Material and Methods

During 2015–2016, a project was carried out to research and identify the ameroseiid mite species in Guilan Province, Northern Iran. The specimens were collected by extracting soil, stored products, debris and plant foliage through a Berlese/Tullgren funnel. The mites were cleared in Nesbitt's solution and were mounted in Hoyer's medium on microscopic slides. The mites were examined under an Olympus BX51 phase contrast microscope (Olympus Optical Co., Ltd, Tokyo, Japan). Diagnostic characteristics of the family Ameroseiidae and its genera and species were based on the literature and from our own study of the material examined. We base our identification keys on KARG (1971, 1993), GILYAROV & BREGETOVA (1977), HALLIDAY (1997) and HAJIZADEH et al. (2013a). Notations for idiosoma and dorsal and ventral setae follow LINDQUIST and EVANS (1965) and LINDQUIST (1994), respectively. Measurements of the dorsal shield are at the maximum length along the midline and width at the level of setae z6. Measurements of ventral shields are their maximum length along the midline and width at the widest level. The setae were measured from their insertion to the tip. All measurements are in micrometers (µm) with the mean followed by the respective ranges. The voucher material (slide mounted specimens) is deposited in the mite collection of the Department of Plant Protection at University of Guilan, Rasht, Iran.

Results

Description of *Ameroseius aegyptiacus* (NASR & ABOU-AWAD)

Sertitympanum aegyptiacus NASR & ABOU-AWAD

Sertitympanum aegyptiacus NASR & ABOU-AWAD, 1986: 77; Girga, Sohag region, Upper Egypt, from litter.

Material examined: Ten female and male specimens were examined: Sangar city (37°-10'-42" N, 49°-41' -38" E), Guilan Province, Iran, rice hulls, September 8, 2015 (female=2; male=2), July 19, 2016 (female=1; male=1); Sangar city, Eslamabad (Shaqaji) Village (37°-22'-22" N, 49°-20'-14" E), Guilan Province, Iran, woodchips, July 19, 2016 (Female=2; male=2),

collected by F. Karami. A total of 75 females and 12 males were collected from different parts of Guilan Province, Iran.

Female

Dorsal idiosoma (Fig. 1): Dorsal shield reticulated over entire surface, with a small marked irregular polygonal ornamentation, strongly sculptured, 339 (312-368) long and 198 (180-220) wide, with 28 pairs of spatulate setae, except leaf like with dentate margin j1 setae. Lengths of dorsal setae: j1 10 (6-12), j2 16 (16-16), j3 13 (12-14), j4 14 (12-16), j5 15 (14-16), j6 15 (12-18), z2 16 (16-18), z4 16 (14-18), z5 14 (14-16), z6 15 (12-16), s1 13 (10-16), s2 17 (16-18), s4 17 (16-18), s5 18 (16-20), s6 21 (20-22), r2 18 (16-20), r3 18 (16-20), r4 17 (16-18), r5 20 (18-22), J2 20 (18-22), J4 23 (22-24), Z1 20 (20-22), Z4 23 (20-24), Z5 25 (24-26), S2 22 (20-24), S3 23 (22-26), S4 26 (24-28) and S5 26 (26- 26).

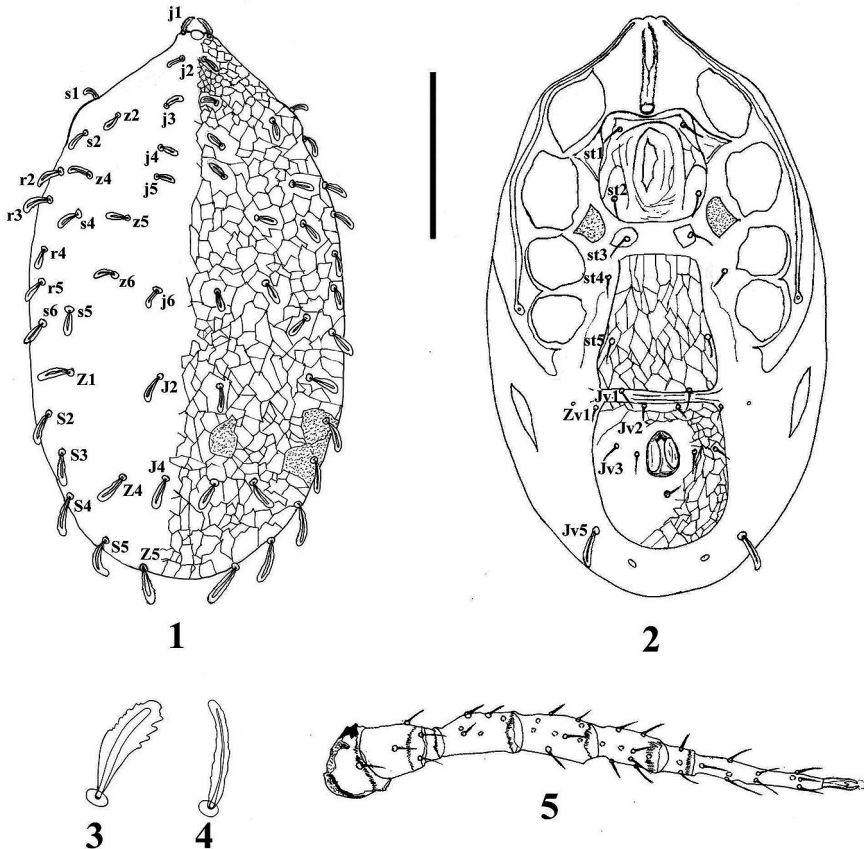
Ventral idiosoma (Fig. 2): Tritosternum bifurcate, with marginally pilose laciniae, 52 (50-60) long (Fig. 9). Sternal shield, with fine reticulation comprising of some semi-circular and circular curved lines more indicated and creating an impression of shallow depression, 62 (58-66) long and 87 (80-94) wide, with two pairs of sternal setae. Third sternal setae on ovate platelets while the fourth on the sternal membrane on region of coxae III. A small well chitinized poroid organ situated on the outside edge of the peritrematal plates between coxisternal II- III. Genital shield, reticulated, 72 (68-82) long and 70 (64-76) wide, bearing a pair of genital setae. Postgenital area with some sclerites. Ventrianal shield reticulated, 83 (78-86) long and 82 (72-88) wide, posterior margin rounded, with two pairs of preanal setae, one pair of adanal setae and one postanal seta. Three pairs of ventral setae on membrane around ventrianal shield, setae Jv5 long and spatulate, other ventral setae simple, needle-like. Lengths of ventral setae: st1 16 (12-20), st2 13 (12-14), st3 14 (12-16), st4 12 (10-14), st5 12 (10-14), Jv1 14 (10-16), Jv2 12 (10-14), Jv3 12 (10-16), Jv5 23 (20-24) and Zv1 12 (10-12). A pair of metapodal shields well developed, elongate and situated well beyond coxae IV, 42 (38-46) long. Peritrematal plates well developed; peritremes long, reaching nearly to the vertical setae j1.

Legs (Fig. 5): Setation of trochanters of legs I-IV, respectively, 5, 5, 3, 4; that of femora 11, 9, 6, 6; that of genua 12, 11, 10, 9; that of tibiae 10, 10, 10, 9. Setation of tarsus of legs II-IV, respectively, 15, 15, 13. Measurements of legs (including pretarsus) are as follows: leg I -250 (236-260), leg II -214 (200-224), leg III -204 (188-216) and leg IV -259 (236-272). Legs with ambulacrum, reduced claws and normal pulvilli.

Gnathosoma (Fig. 6): Corniculi trifid distally, 20 (18-20) long (Fig. 8). All hypostomal setae are simple except the rostral one (h1), robust, stout, sinuous and converged, h1 17 (16-18), h2 9 (6-10), h3 18 (16-18), sc 20 (20-20). Tectum broad, round, with median anterior projection bipartite distally, with four teeth on the right and left margins (Fig. 10). Palptarsal apotele bifid. Fixed digit of chelicerae with three teeth, 26 (26-26) long; movable digit 20 (20-22) long (Fig. 7).

Remarks: The specimens collected in Guilan Province Iran show some morphological differences with holotype described by NASR & ABOU-AWAD (1986). The idiosomal size of Iranian specimens is little larger (339 vs. 320 long and 198 vs. 172 wide). Some dorsal shield setae in the Iranian specimens are slightly longer (J2 20 vs. 16, J4 23 vs. 20, S5 26 vs. 22), unfortunately original description has only a single

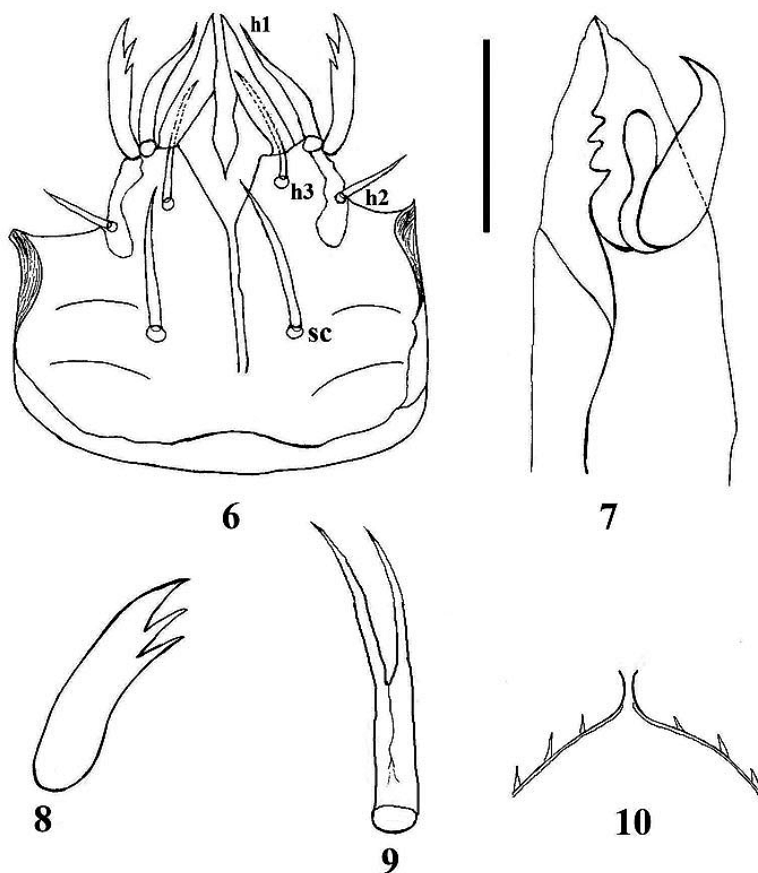
measurement for four (J2, J4, Z5 and S5) of the 24 pairs of dorsal setae. In original description, all dorsal setae listed as spatulate, but setae j1 in Iranian specimens are leaf like with dentate margin. Genital, ventrianal and metapodal shields are little longer in Iranian specimens (72 vs. 64, 83 vs. 80, 42 vs. 37 respectively). Transverse rows of hypostomal groove are not visible in Iranian specimens, in original description mentioned that hypostomal groove has 6 transverse denticles rows, but it is not shown in related figure. Tectum has longer lateral teeth in Iranian specimens than holotype specimen. Legs are longer in Iranian specimens (250 vs. 227, 214 vs. 192, 204 vs. 172 and 259 vs. 228, respectively for legs I-IV). The other morphological characters are very similar to the original description. Therefore we consider these differences as intraspecific variations.



Figs. 1-5. *Ameroseius aegyptiacus* (NASR & ABOU-AWAD, 1986) female: (1) dorsal view of idiosoma; (2) ventral view of idiosoma; (3) seta Z5; (4) seta Jv5; (5) Leg IV. Scale bar: 100 μ m for (1), (2); 35 μ m for (3); 28 μ m for (4); 78 μ m for (5).

Male

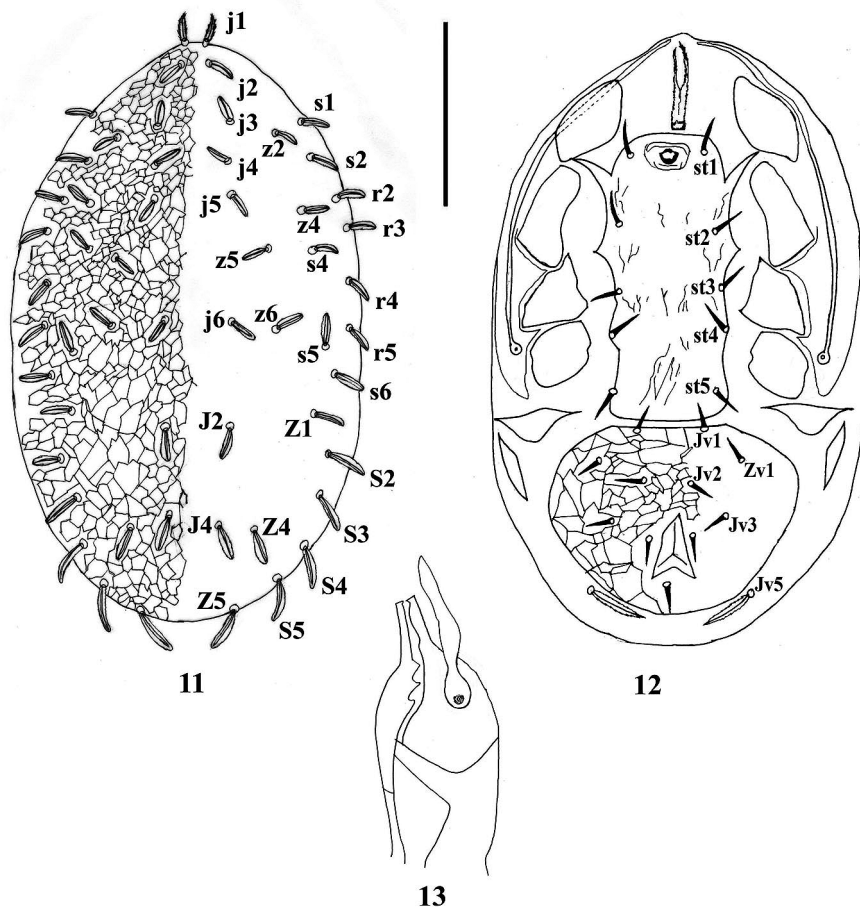
Dorsal idiosoma (Fig. 11): Dorsal shield reticulated over entire surface, with a small marked irregular polygonal ornamentation, 267 (264-280) long and 163 (156-172) wide, with 28 pairs of spatulate setae, except leaf like with dentate margin j1 setae. Lengths of dorsal setae: j1 8 (6-10), j2 12 (10-14), j3 12 (10-14), j4 10 (10-12), j5 10 (10-12), j6 13 (12-14), z2 14 (12-16), z4 13 (12-14), z5 12 (10-14), z6 12 (10-14), s1 14 (12-14), s2 15 (14-16), s4 15 (14-16), s5 16 (14-16), s6 17 (14-18), r2 16 (14-18), r3 16 (14-16), r4 13 (12-14), r5 16 (14-16), J2 15 (14-18), J4 19 (18-20), Z1 17 (14-20), Z4 19 (18-20), Z5 19 (18-20), S2 18 (16-20), S3 19 (18-20), S4 22 (20-22) and S5 21 (20-24).



Figs. 6-10. *Ameroseius aegyptiacus* (NASR & ABOU-AWAD, 1986) female: (6) ventral view of gnathosoma; (7) chelicera; (8) corniculi; (9) tritosternum; (10) tectum. Scale bar: 25 μ m for (6); 20 μ m for (7); 15 μ m for (8); 31 μ m for (9).

Ventral idiosoma (Fig. 12): Tritosternum bifurcate, with marginally pilose laciniae. Sternogenital shield with 1 semi-circular structure at level coxa I and some traces of lines on surface, 132 (126-134) long and 74 (66-78) wide, bearing five pairs of

simple setae (st1-st5). Ventrianal shield reticulated, 83 (78-88) long and 108 (104-120) wide, posterior margin rounded, with four pairs of preanal setae, one pair of paraanal setae and one postanal seta. Setae Jv5 long and leaf like, other ventrally situated setae simple, needle-like. Lengths of ventral setae: st1 13 (10-18), st2 11 (10-14), st3 11 (8-14), st4 10 (8-10), st5 10 (8-10), Jv1 8 (6-8), Jv2 9 (6-10), Jv3 10 (6-12), Jv5 15 (14-18) and Zv1 9 (6-10). Metapodal areas with two pairs of shields: one pair of transversely oriented parapodal shields, 32 (28-35) wide, 25 (23-30) long and a pair of longitudinally oriented shields, 37 (34-38) long. Peritrematal plates well developed; peritremes long, reaching nearly to the vertical setae j1.



Figs. 11-13. *Ameroseius aegyptiacus* (NASR & ABOU-AWAD, 1986) male: (11) dorsal view of idiosoma; (12) ventral view of idiosoma; (13) chelicera. Scale bar: 90 μ m for (11), (12); 25 μ m for (13).

Legs: Setation of legs similar to female. Measurements of legs (including pretarsus) are as follows: leg I -223 (205-260), leg II -190 (175-205), leg III -179 (165-200) and leg IV -230 (210-245). Legs with ambulacrum, reduced claws and normal pulvilli.

G n a t h o s o m a : Fixed digit of chelicerae with three teeth, 37 (34-40) long; movable digit 35 (33-39) long, spermatodactyl 22 (20-24) long (Fig. 13). Hypostome, corniculi, apotele and tectum similar to female.

***Ameroseius lanceosetis* LIVSHITZ & MITROFANOV**

Ameroseius lanceosetis LIVSHITZ & MITROFANOV, 1975: 462; Crimea, Ukraine; in cereal warehouse.

M a t e r i a l e x a m i n e d : Two male specimens were examined: Sangar City, Eslamabad (Shaqaji) Village (37°-22'-22" N, 49°-20'-14" E), Guilan Province, Iran, rice hulls, August 20, 2015 (n=1); Shaft city, Jirdeh village (37°-10'-36" N, 49°-29'-03" E), Guilan Province, Iran, rice hulls, June 26, 2016 (n=1), collected by F. Karami. A total of 50 females and 3 males of *A. lanceosetis* were collected from different parts of Guilan Province, Iran.

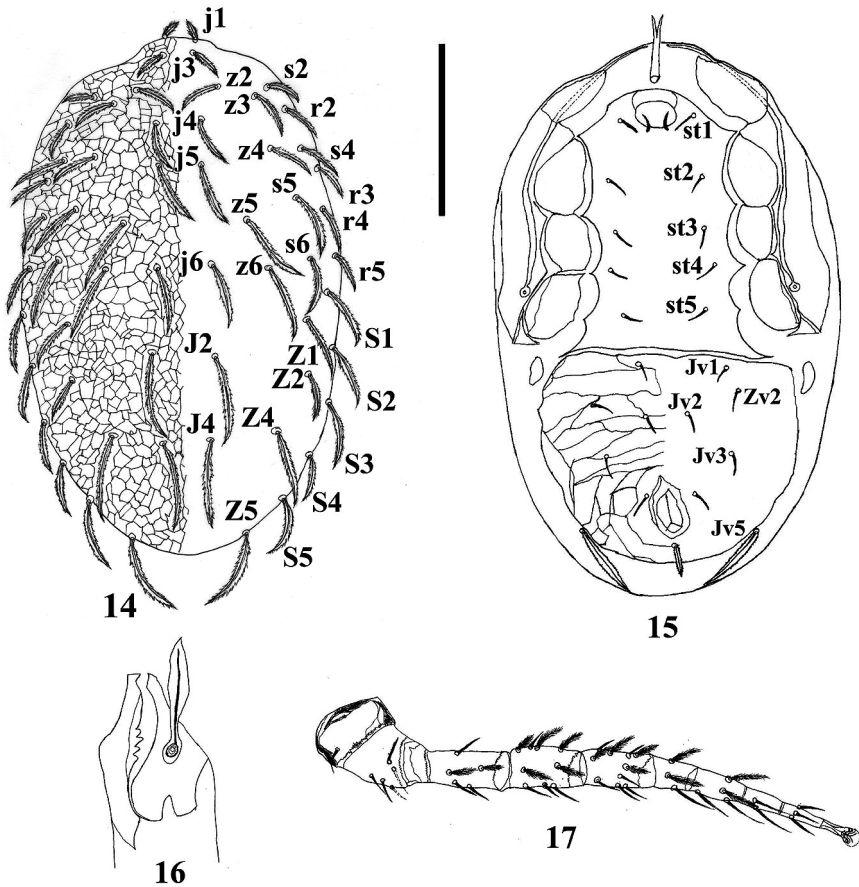
Male

D o r s a l i d i o s o m a (Fig. 14): Dorsal shield oval, reticulated throughout and with several shallow depressions on surface, completely covering dorsal idiosoma, 320 (296-344) long and 196 (172-220) wide, with 29 pairs of setae. These setae sickle like, densely barbed and with rows of short pectinations. Lengths of dorsal setae: j1 20, j3 22, j4 31 (30-32), j5 35 (30-40), j6 46 (40-52), z2 27 (26-28), z3 32 (30-34), z4 30 (26-34), z5 35 (30-40), z6 30, s2 24, s4 27 (24-30), s5 34 (30-38), s6 35 (32-38), r2 26 (22-30), r3 25 (24-26), r4 30 (28-32), r5 27 (26-28), J2 55 (50-60), J4 56 (50-62), Z1 33 (28-38), Z2 35 (32-38), Z4 46 (42-50), Z5 43 (40-46), S1 34 (30-38), S2 35 (30-40), S3 36 (32-40), S4 35 (30-40) and S5 37 (36- 38). Dorsal idiosomal pore-like structures and lyrifissures are not conspicuous.

V e n t r a l i d i o s o m a (Fig. 15): Tritosternum bifid in subdistal portion, with longer base and shorter laciniae. Sternogenital shield smooth, 166 long and 92 wide, bearing five pairs of simple setae (st1-st5). Ventrianal shield, wide, reticulated, 111 (98-124) long and 146 (128-164) wide, with posterior margin rounded, four pairs of preanal setae, one pair of adanal setae and one postanal seta. Except plumose postanal seta and one setal pair (Jv5) inserted close to posterolateral margins of ventrianal shield, all other ventral setae simple, smooth and needle like. Lengths of ventral setae: st1 14, st2 16, st3 16, st4 14, st5 14, Jv1 12, Jv2 14, Jv3 14, Jv5 60 and Zv2 14. Metapodal shields oval and situated well beyond coxae IV, 21 (20-22) long. Peritrematal shields well developed; peritremes long, reaching anteriorly close to vertical setae j1.

L e g s (Fig. 17): Setation of trochanters of legs I-IV, respectively, 5, 5, 5, 5; that of femora 11, 10, 6, 5; that of genu 12, 10, 10, 9; that of tibia 12, 10, 8, 9. Setation of tarsus of legs II-IV, respectively, 13, 15, 12. Measurements of legs (including pretarsus) are as follows: leg I -302 (296-308), leg II -206 (172-240), leg III -206 (180-232) and leg IV -266 (228-304). Legs with ambulatorium, claws and pulvilli; tarsus I to IV with long stalked pretarsus.

G n a t h o s o m a : Hypostome, corniculi, apotele and tectum similar to female. Fixed digit of chelicerae with four teeth, 39 (39-40) long; movable digit 30 (30-31) long, spermatodactyl 27 (25-29) long (Fig. 16).



Figs. 14-17. *Ameroseius lanceosetis* LIVSHITZ & MITROFANOV, 1975 male: (14) dorsal view of idiosoma; (15) ventral view of idiosoma; (16) chelicera; (17) Leg IV. Scale bar: 100 μ m for (14), (15); 35 μ m for (16); 80 μ m for (17).

Key to genera, subgenera and species of Ameroseiidae from Iran (Females)

The key to the Ameroseiidae of Iran (female) presented by HAJIZADEH et al. (2013a) is modified here to accommodate the new recorded species of ameroseiid mites from Iran during 2013 to date.

1. Dorsal shield with a pattern of star-like microtubercles and bearing at most 24 pairs of mostly very long setae [*Epicriopsis* BERLESE, 1916]2
- Dorsal shield otherwise sculptured, with more than 24 pairs of setae of various lengths.4
- 2 Setae j2 and j3 not reaching base of the following pairs of setae, j5 absent.*Epicriopsis horridus* (KRAMER, 1876)
- Setae j2 and j3 reaching base of the following pairs of setae; j5 present.....3
- 3 Tectum triangular with a smooth edge *Epicriopsis baloghi* KANDIL, 1978

- Tectum triangular with a dentate posterior margin.....*Epicroipsis palustris* KARG, 1971
- 4 Genu III with one pl seta; palp apotele 3-tined; anal shield with only three circum-anal setae (except for *A. furcatus*, that bears three circum-anal setae and a pair of preanal setae) [*Ameroseius (Ameroseius)* BERLESE, 1904]5
- Genu III with two pl setae; palp apotele 2-tined; ventrianal shield with 1-2 pairs of preanal and three circum-anal setae [*Ameroseius (Kleemannia)* OUDEMANS, 1930]11
- 5 Anal shield heavily sclerotized and ornamented with rough foveolate sculpture, genital shield tapered posteriorly*Ameroseius (A.) sculptilis* BERLESE, 1916
- Anal shield weakly sclerotized, delicately ornamented on surface and with fine pattern of lines and meshes; genital shield subrectangular, with almost parallel lateral margins6
- 6 Dorsal shield setae broadened distally, with narrower *basal* part and stouter distal part, lancet-like or club-like*Ameroseius (A.) corniculus* KARG, 1971
- Dorsal shield setae regularly tapered apically, with broadened basal part and narrowed distal part7
- 7 Setae J4 long, with tip reaching or exceeding the posterior margin of dorsal shield8
- Setae J4 short, with tip clearly not reaching the posterior margin of dorsal shield9
- 8 Seta j1 feather-like; seta Z5 and S5 subequal in length.....*Ameroseius (A.) corbiculus* (SOWERBY, 1806)
- Seta j1 acerate; seta Z5 much longer than (more than twice) seta S5*Ameroseius (A.) furcatus* KARG, 1971
- 9 J- and j-series setae subequal in length; anus with anterior position on anal shield*Ameroseius (A.) fungiculis* MAŠAN, 1998
- Setae of J-series clearly longer than j-series setae (j4 and j5 the shortest setae in dorsocentral setal row); anus with central to posterior position on anal shield10
- 10 Setae S5 and Z5 rounded apically*Ameroseius (A.) ulmi* HIRSCHMANN, 1963
- Setae S5 and Z5 tapered apically*Ameroseius (A.) lidiae* BREGETOVA, 1977
- 11 Sternal shield with circular, subcircular or heavily sclerotized ring-like ornaments12
- Sternal shield normal, without specific structure13
- 12 Sternal shield with non-sclerotized circular or subcircular ornaments [*Sertitympanum* ELSEN & WHITAKER, 1985]*Ameroseius (K.) aegyptiacus* (NASR & ABOU-AWAD, 1986)
- Sternal shield with heavily sclerotized ring-like structure between sternal setae, the structure undulated on anterior margin*Ameroseius (K.) plumosus* (OUDEMANS, 1902)
- 13 Genital shield with a well sclerotized horseshoe-like structure on anteromedial surface14
- Genital shield normal, without specific structure on surface15
- 14 Dorsal shield with 28 pairs of setae; metasternal shield present*Ameroseius (K.) parplumosus* (NASR & ABOU-AWAD, 1986)
- Dorsal shield with 29 pairs of setae; metasternal shield absent*Ameroseius (K.) plumea* (OUDEMANS, 1930)
- 15 Vertical setae j1 foliately widened, fan-like*Ameroseius (K.) novus* (NASR & ABOU-AWAD, 1986)
- Vertical setae j1 not modified, uniform with other dorsal shield setae16
- 16 Medial anterior margin of ventrianal shield curved inwards and associated with well adjacent ventral setae Jv2 (these setae placed on or off the shield)17
- Anterior margin of ventrianal shield almost straight or regularly rounded; setae Jv2 with well separated bases and inserted on inner surface of the shield, well behind its anterior margin18
- 17 Dorsal shield weakly sclerotized, with simple and delicate net-like pattern on surface; setae Jv2 with position on ventrianal shield*Ameroseius (K.) eumorphus* BREGETOVA, 1977

- Dorsal shield well sclerotized at least in marginal region, with rough foveolate pattern of well developed ridges and depressions on surface; setae Jv2 usually with position off ventrianal shield *Ameroseius* (K.) *insignis* BERNHARD, 1963
- 18 Dorsal setae j5 (75-85 µm) and J2 (85-100 µm) long.....19
- Dorsal setae j5 and J2 shorter than above.....20
- 19 Corniculi bifurcate *Ameroseius* (K.) *delicatus* BERLESE, 1918
- Corniculi trifurcate *Ameroseius* (K.) *plumigerus* (OUDEMANS, 1930)
- 20 Setae j5 with tip exceeding clearly beyond the base of the following seta
..... *Ameroseius* (K.) *pseudoplumosus* RACK, 1972
- Setae j5 with tip never reaching the base of the following seta21
- 21 Setae J2 with tip never reaching to the base of the following seta; ventral setae consists of 7 pairs plus short smooth postanal seta *Ameroseius* (K.) *pavidus* (KOCH, 1839)
- Setae J2 with tip reaching the base of the following seta; ventral setae consists of 6 pairs plus longer plumose postanal seta
..... *Ameroseius* (K.) *lanceosetis* LIVSHITZ & MITROFANOV, 1975

Guilan Province, Iran ameroseiid mites

During this study, a total of 12 ameroseiid species in 3 genera, *Ameroseius corbiculus*, *A. furcatus*, *A. lidiae*, *A. sculptilis*, *A. insignis*, *A. lanceosetis*, *A. parplumosus*, *A. pseudoplumosus*, *A. pavidus*, *Epicriopsis palustris*, *E. horridus* and *Sertitympanum aegyptiacus* were identified in Guilan Province, Northern Iran. *Ameroseius insignis*, *A. parplumosus*, *A. pseudoplumosus* and *A. pavidus* are new records for Guilan Province mite fauna.

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Zusammenfassung

Nach dem Vergleich mit der Originalbeschreibung von *Ameroseius aegyptiacus* (NASR & ABOU-AWAD, 1986) aus Ägypten werden in dieser Arbeit eine erweiterte Beschreibung inklusive Illustrationen für das adulte Weibchen bereitgestellt. Basierend auf dem iranischen Untersuchungsmaterial wurden die Männchen von *A. aegyptiacus* und *A. lanceosetis* LIVSHITZ & MITROFANOV, 1975 neu beschrieben. Ein überarbeiteter Bestimmungsschlüssel der 22 im Iran nachgewiesenen Milbenarten wurde ebenfalls erstellt.

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