

**THE SECOND RECORD OF THE OCCURRENCE OF  
*ALLOCAECULUS MULTISPINOSUS* FRANZ  
(ACARI: CAECULIDAE)**

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ABSTRACT: Eleven female mite specimens found in pitfall samples from Aydın and Muğla provinces in Turkey were identified as *Allocaeculus multispinosus* Franz (Acari: Caeculidae). The morphological characteristics of the species by means of the light microscope and scanning electron microscopy images were given here. This species known only for the type locality in Spain was reported from the second locality in Turkey.

KEY WORDS: Mite, rake-legged, diversity, new record, Turkey

The family Caeculidae (Acariformes: Trombidiformes) is a group of predatory mite characterized by their large (1000-3000 long) and strongly sclerotized body. They are found worldwide in drier habitats such as beaches, beach vegetation, tree bark, rocky niches in desert and mountain habitats, and usually are free-living. They are commonly known as "rake-legged mites" because of the presence of elongate spine like setae on the legs, particularly the first pair. This family currently comprises seven genera; *Allocaeculus* Franz, *Andocaeculus* Coineau, *Caeculus* Dufour, *Calocaeculus* Coineau, *Microcaeculus* Franz, *Neocaeculus* Coineau and *Procaeculus* Jacot (Coineau, 1974; Fuangarworn & Butcher, 2015; Per et al., 2017; Taylor, 2013; Taylor, 2014; Walter et al., 2009).

The genus *Allocaeculus* has 35 species and shows distribution to both the Palearctic and Ethiopian regions (Per et al., 2017). Member of *Allocaeculus* are easily recognizable by the anterior half of the prodorsal sclerite being extensively neutrichous, unequal tarsal claws of leg I, and by the absence of dorsodistal bothridia *bt* on legs I and II (Taylor, 2013).

In this study, the species *Allocaeculus multispinosus* Franz inhabiting in the Aydın and Muğla provinces are evaluated from the taxonomic point of view with the aim of contributing to the biological diversity in Turkey.

#### MATERIAL AND METHODS

The mite specimens were directly obtained by pitfall traps from Aydın and Muğla provinces, Turkey. The material was preserved in 70% ethanol. The specimens were examined by means of an Olympus CX21 microscope and Leo 440 scanning electron microscope. All measurements were done with ocular micrometer, and given in micrometers (µm). The measurement ranges are given in parentheses. Specimens examined were deposited in the Biology Department of Bozok University, Turkey.

## RESULTS

### *Allocaeculus multispinosus* Franz, 1955

(Figs. 1-3)

*Measurements.* Length of body 1725 (1610-1975), width 920 (890-1050), (n = 6).

*Integument.* Color yellowish brown and cover with many different modified yellow setae and spines.

*Dorsal region* (Figs. 1, 3). With 1 prodorsal and 5 hysterosomal plates. Integument between middle hysterosomal plate and the lateral plates longitudinally wrinkled.

Prodorsal plate bearing with 13 setae in left, 10 in right, the bothridial setae (*bo*) fusiform, length 140. Seta *cp* longer than others, length 270. Two pairs of eyes situated on optical tubercle on prosoma. The middle hysterosomal plate 810 long and 660 wide, bearing eleven pairs setae (*h*). Setae *a<sub>1</sub>*, *b<sub>1</sub>* and *c<sub>1</sub>* longer than others (270, 260 and 310 in length, respectively). Lateral plates rectangular, its 16 setae (*h'*) in left, 17 in right. Setae *a<sub>2</sub>*, *a'<sub>2</sub>*, *b<sub>2</sub>* and *c<sub>2</sub>* longer than others (290, 320, 340 and 280 in length, respectively). First caudal plate collapsed in the middle part, its inferior edge with 11 setae in left, 13 in right. Setae *d<sub>2</sub>* and *d<sub>3</sub>* are longer than others (270 and 300 in length, respectively). Second caudal plate oblong, its inferior edge with 12 setae in left, 13 in right. Setae *e<sub>1</sub>* and *e<sub>2</sub>* longer than others (220 and 200 in length, respectively).

*Ventral region* (Fig. 2). With 4 coxisternal plates and strongly sclerotized genital and anal plates. Epimeral setal formula 4-3-3-3. Eleven pairs of aggenital setae present, dark brown genital plates strongly sclerotized, genital plate length 280, width 200. Five pairs of setae on genital plate present, anal plates also dark brown and strongly sclerotized, anal plates length 320, width 280. Three pairs of setae on anal plates present.

*Legs* (Figs. 1-3). Leg I with 9 robust spines and 1900 (1460-2035) in length. Spine lengths vary 300-340. Unequal tarsal claws of leg I. Dorsodistal bothridia *bt* present on legs III and IV.

*Material examined.* Turkey, Aydın, Topçam dam region, N: 37°41'24", E: 28°00'55", 112 m, August 2010, 6 examples by pitfall traps, by E.A. Yağmur, Turkey, Muğla, Kıyıkışlacık village, N: 37°16'48", E: 27°33'93", 2 m, in the period of May-July 2011, by pitfall traps, 5 examples by M. Elverici.

## DISCUSSION

*Allocaeculus multispinosus* Franz has been known only from Spain in 1955 (Franz, 1955). With this study, the species is recorded for the second time from Turkey apart from its type locality. This species resembles *A. echinatus* Franz and *A. spinosissimus* Franz, but it differs from the latter by the following features: 2 thick spines on basifemur I (3 in *A. echinatus*), seta *cp* on proterosoma is single (double in *A. echinatus* and *A. spinosissimus*). The middle hysterosomal plate bearing eleven pairs of setae (seven pairs in *A. spinosissimus*). The range of body size of *A. multispinosus* was given as 1500-1600 / 800-900 by Franz (Franz,

1955). The range of body size of our specimens are found as 1610-1975 / 890-1050. The body size of the Turkish specimens seems bigger than those of previously given from Spain by Franz.

In the family Caeculidae, variations have been observed by some authors (Enns, 1958; Otto, 1993; Per et al., 2017; Taylor, 2013). Variations and asymmetries in dorsal setation of *Neocaeculus imperfectus* Taylor et al., *N. orientalis* Fuangarworn and Butcher, and *Allocaeculus turcicus* Per et al. were given by Taylor et al., Fuangarworn and Butcher and Per et al., respectively (Fuangarworn & Butcher, 2015; Per et al., 2017; Taylor, 2013). Detailed discussion of patterns of variation in setation within and between Caeculid species was provided by Coineau (Coineau, 1974).

Franz (Franz, 1955) did not specify whether there were infraspecific variations in his specimens or not. There are variation and asymmetry in the distribution of setae on the prodorsal, the first and the second caudal plates in the Turkish samples. The Turkish specimens were found to be in conformity with the examples given in Spain by Franz (Franz, 1955) with other properties.

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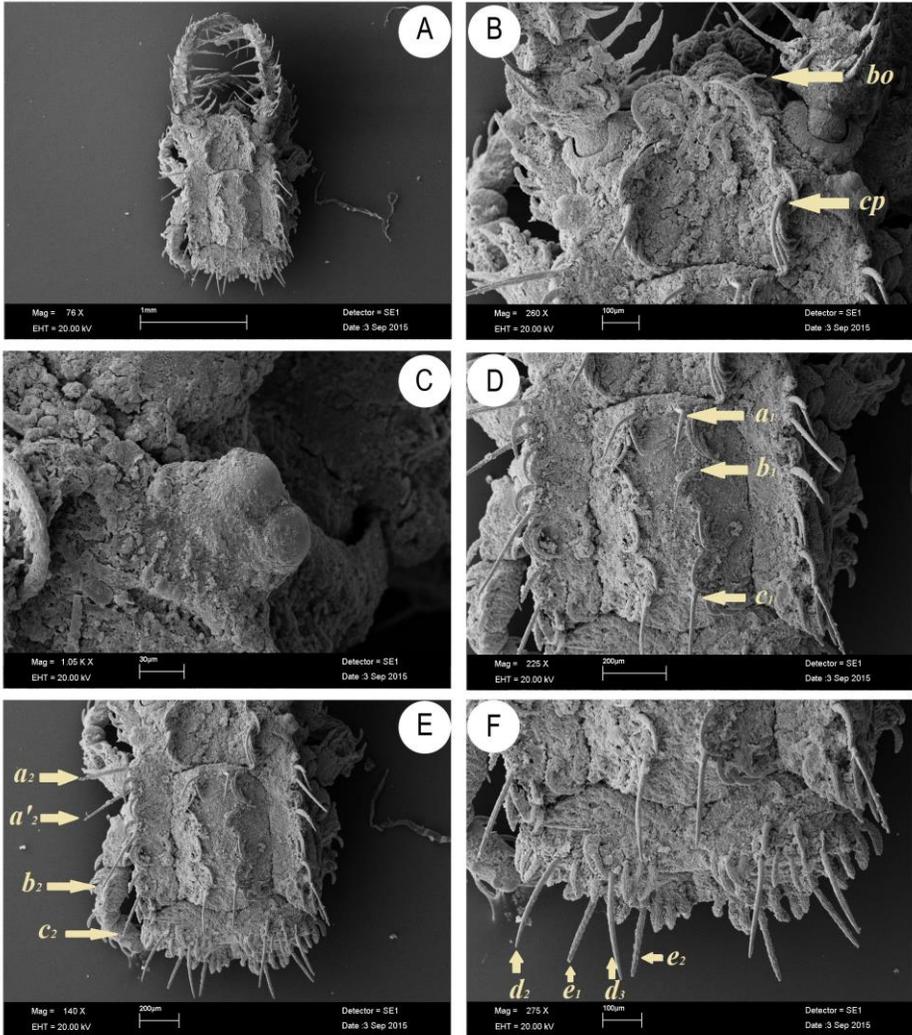


Figure 1. *Allocaeculus multispinosus* A: Dorsal view, B: Prodorsal plate, C: Right eyes, D: The middle hysterosomal plate, E: The middle hysterosomal and the lateral plates, F: The first and the second caudal plates.

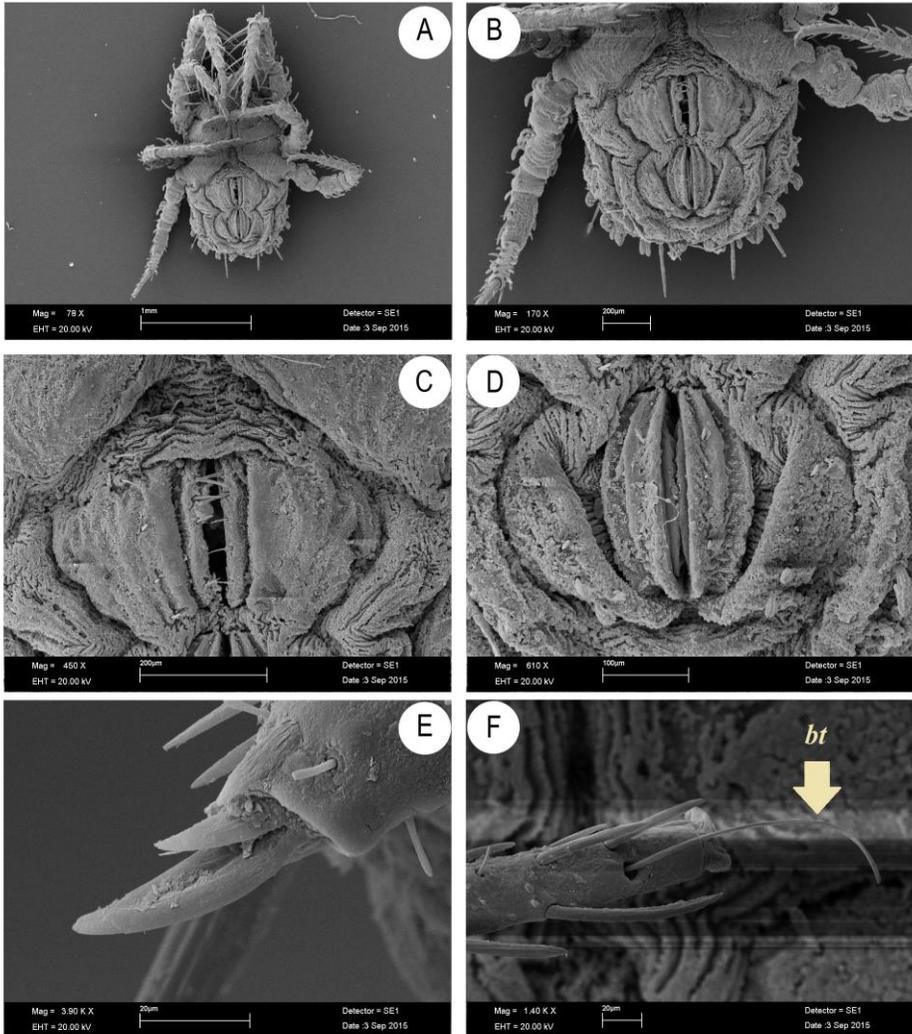


Figure 2. *Allocaeculus multispinosus* A: Ventral view, B: Genital and anal regions, C: Genital region, D: Anal region, E: Tarsal claws (Leg I), F: Bothridial seta *bt* (Leg IV).

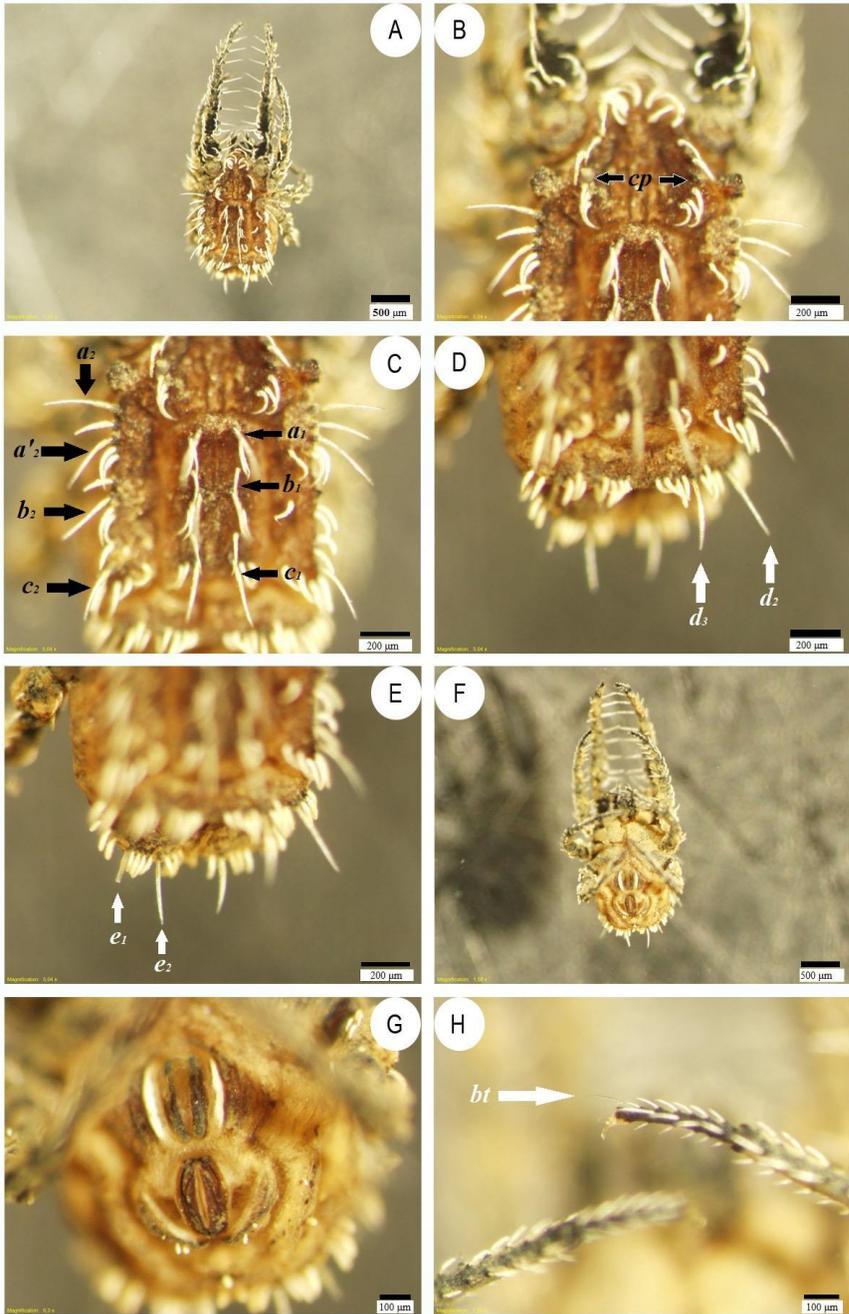


Figure 3. *Allocaeculus multispinosus* A: Dorsal view, B: Prodorsal plate, C: The middle hysterosomal and the lateral plates, D: The first caudal plate, E: The second caudal plate, F: Ventral view, G: Genital and anal region, H: Bothridial seta *bt* (Leg III).