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TWO NEW SPECIES OF MESOSTIGMATID MITES (ACARI) ASSOCIATED WITH SPONGES FROM THE RED SEA, EGYPT

(With 2 Tables, 3 Figure and 1 Pl.)

By

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نوعان جديدان من الحلم وسطية الثغور ملتصقة بالأسفنج من البحر الأحمر – مصر

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تناولت هذه الدراسة وصف و تعريف نوعين جديدين من حلم الماء تتبع تحت رتبة وسطية الثغور التنفسية و هما نلانودسكس فوركاتس و زركن ريتكيولاتس. و قد جمع هذين النوعين من الإسفنج عند الكيلو ٨٥ بالقصير بالبحر الأحمر فى مصر.

SUMMARY

Two new species of mesostigmatid water mites were collected from the Wild sponge, Red Sea, Egypt, *Planodiscus furcatus* n. sp. and *Zercon reticulatus* n. sp..They are recorded and described for the first time.

Key words: *Mesostigmatid Mites - Sponges - Red sea - Egypt.*

INTRODUCTION

Mesostigmatid mites are common in terrestrial habitats and were recorded from different parts of the world (Mcmurtry, 1977; Witalinski, 1977; Blaszak, 1981; Pugh et al., 1987; Evans, 1988; Krantz, 1988; Walter, 1988; Wise et al., 1988; Evans et al.,1991). Also, they are

associated with insect hosts as army ants (Elzinga & Rettenmeyer, 1966, 1970, 1974 ; Elzinga, 1978, 1981, 1990 , 1991 , 1993, 1994, 1995).

To the best of the present author's knowledge, few works on freshwater mites had been published in Egypt. For Example , Mazen (1979) recorded 4 free living species of freshwater Mesostigmata, collected from three water bodies in Assiut Governorate, Egypt. Recently, Ramadan (1992) identified 7 species of mesostigmatid mites associated with the roots of floating plant, *Eichhornia crassipes*. To fill this gap, the present work is concerned with the study of 2 new species of mesostigmatid mites collected for the first time, from the Wild sponge, Red Sea, Egypt.

MATERIALS and METHODS

Sampling from the Red Sea Coast had been carried out from a site 85 km South of Quesier city. The sponge colonies were collected during low tide (water depth 0.5 - 1 meter). They were collected by using a knife passed underneath and picked up by hands. Then the specimens were transferred into plastic containers containing 70% ethyl alcohol. In the laboratory, the sponges were taken and kept in 15% KOH solution for 24 hours to loosen the sponge tissues. This method facilitates the picking up of mites under a binocular microscope. The adult mites were preserved in a small glass vials containing 70% ethanol. Some mites were mounted separately in a droplet of Hoyer's medium. Drawings were done by help of camera lucida and measurements (in microns) were done by calibrated eye piece. The specimens deposited in the Zoological Museum of Faculty of Science, Sohag, South Vally University.

RESULTS

***Planodiscus furcatus* n. sp. (Fig. 1 , 2)**

Adult female: (Fig. 1A - J)

The body of the fresh mite is oval-shaped, faint brownish in colour and measures about 479 µm long and 348 µm wide. Gnathosoma attached to the base of coxae I, in a cavity between coxae I and dorsal prolongation. Each palp measures about 96 µm long. Palpal apotele is two-tined. Chelicerae are long, each of which measures about 229 µm long.

The dorsal side carries 52 pairs of forked and serrated setae. The anterior portion of the idiosoma is punctated and carries seven pairs of

forked setae. The posterior region is decorated with a network reticulations and bears 22 pairs of forked setae and 23 pairs of serrated setae. The forked setae are concentrated on the central region of the plate, while the serrated ones are scattered on the lateral and sublateral regions. Tectum has three serrated branches (two long lateral and one short median).

At the ventral side, tritosternum consists of a long finely feathered lacinia sets on a trapizoidal base. The hypostome measures about 65 μm in length. The sternitigenital shield is elongated in shape, decorated with a network reticulation and measures about 263 μm long and 47 μm wide. It bears three pairs of pores and six pairs of short simple setae. The holdfast lobes are situated antero-laterally. On each side, the endopodal shields and foveolae pedales are fused together, and measures about 286 μm long. The peritremal shields are separated from the ventral ones. The metapodal shields are oval in shape and separated by membranous sutures from the ventrianal shield. The latter is triangular in shape and carries three pairs of setae and anal area which bears two short adanal setae. On each side of the body, there are six forked setae on the podosomal margin and six serrated ones on the opisthosomal margin.

Leg I has six segments, while legs from II-IV have seven segments (not including pretarsus). Coxa I is contiguous (at least twice as long as broad) much larger than coxae II-IV and covering inconspicuous tritosternum. Tip of leg I carries numerous setae, including several sensory ones and two tarsal claws. The dorsal surface of coxa I is decorated with a network reticulation and bears two pairs of setae near the middle part of the inner edge. Legs II - IV fold into deep pits (foveolae pedales). Femurs of legs I - IV with hyaline flanges. The measurements of legs from I - IV are 195, 224, 213 and 221 μm long, respectively. Legs II-IV are terminated with a pair of ambulacral claws and sucker like caruncle.

Adult male: (Fig. 2A - G)

The body measures about 395 μm long and 263 μm wide. Its description is similar to that of female except in the followings:

Each palp measures about 83 μm long. Chelicera measures about 208 μm long. The dorsal side carries 95 pairs of simple setae. The distribution of setae on the pro-scutum is fewer in number than that on the post-scutum. Ventrally, the hypostome measures about 117 μm long. The sterntigenital shield measures about 294 μm long. It carries 12 pairs of simple setae, male genital aperture and 3 pairs of pores. The ventrianal

shield is broader than long and bears two pairs of setae and a pair of adanal setae. The peritremal shields are contiguous and fuse together posteriorly. In addition, there are 20 pairs of simple setae scattered along the ventro-lateral margins of the body and five pairs of simple setae located on the anterior margin of the body. The lengths of legs from I-IV measure 189, 185, 174 and 195 μm, respectively.

Zercon reticulatus **n. sp. (Fig. 3A- I)**

Adult male:

Body is oval-shaped, faint brownish in colour and measures about 338 μm long and 235 μm wide. Each palp is simple, measures about 104 μm long. Palpal apotele is two-tined. Each chelicera is short, measures about 81μm long and its movable digit bears a club-like structure (spermatodactyl).

The dorsum is divided into two plates, decorated with punctated network reticulations. It carries 25 pairs of simple setae and two pairs of large pores. The latero-dorsal setae are hard and thicker than the other ones. Epistome measures about 43 μm long and its terminal margin has four pairs of teeth-like structure.

Ventrally, tritosternum has two long finely-feathered laciniae fused at the base. The hypostome measures about 52 μm long and bears two rows of tiny teeth-like structures. The sternitigenital shield has an inverted trapezoidal-shape measuring about 195 μm long and 81 μm wide. It bears an oval-shaped genital aperture and five pairs of short simple setae. There are two pairs of triangular endopodal shields, the first pair is located between the coxae of legs II and III, while the second one is situated between coxae of legs III and IV. The ventrianal shield is a cup-like structure, measures about 26 μm long and 18 μm wide. It carries the anal area and five pairs of simple setae and a single post-anal seta. There are 8 pairs of thick simple setae scattered on the lateral margin of the body, ventrianal shield. The peritremal shields are separated from the ventral shields.

Each leg is covered with groups of long and short simple setae. The lengths of legs from I-IV measure about 231, 268, 260 and 291 μm, respectively. Each leg terminates with a pretarsus that bears a pair of claws and a club-like empodium. No females were found in the collected samples.

DISCUSSION

The first new species *Planodiscus furcatus* has foveolae pedales and metapodal shields. The latter shields are completely separated from the ventral ones by a membranous suture. These characters were proposed by Krantz (1970) for family Planodiscidae.

The present species displays the generic characters of the genus *Planodiscus* which are: lateral plates completely separated from other plates, anal plate fused with the ventral plate and the body longer than broad (Sellnick, 1926; Krantz, 1970).

There are 11 identified species belonging to genus *Planodiscus,* recorded by Sellnick (1926); Elzinga & Rettenmeyer (1966, 1970); Krantz (1970) and Elzinga (1990, 1991). The presnt species is closely related to *Planodiscus squamatim* (Elzinga and Rettenmeyer, 1966), where they are similar in the following characters:

1- Shape and postion of dorsal setae in the central region.
2- Shape and decoration on coxae of leg I.
3- Shape of chelicerae, palpi and hypostome.

But they differ in the followings:

1- Size of ventrianal plate in both sexes.
2- Number of setae on the sternigenital shield of female.
3- Hyaline flange on the femurs of legs in both sexes.
4- Dorsum and ventrolateral margins of the female.
5- Number of tectum branches.

See Table (1): So, the present species is a new one and has its own diagnostic and specific characters

The diagnostic characters of the first species:

Host: Wild marine sponge.

Distribution of the host: Red Sea, Egypt

: Lives inside the pores and spaces of sponge body.

Specific characters:

1- In both sexes, ventrianal plate broader than long.
2- The sternitigenital shield of female bears six pairs of simple setae.
3 -The dorsum and ventro-lateral margins of the female carry forked setae.

4 - In both sexes, femurs of legs I - IV provided with hyaline flange.
5- In both sexes, tectum has three serrated branches (two laterals are long and one median is short).

The nomenclature of the species:

The name of the first species is referred to the forked setae of, the body.

The second new species *Zercon reticulatus* displays the aracteristic features of the family Zerconidae mentioned by Krantz (1970) and Blaszak (1981). The characters are: the dorsal shield is divided into podosomal and opithosomal shields, the posterior edge of the opithosomal shield carries a row of four large pores, the dorsal side bears more than 20 setae and the male genital opening lies within the sternal shield.

The present species shows the characters of the genus *Zercon* proposed by (Krantz, 1970). These characters are: the dorsum is divided into a pronotal and an opisthosomal shields. The hypostome carries 4 pairs of setae (three pairs are long, simple and arranged in triangular manner, while the fourth one is tiny and lies on the base of the hypostome) and the tritosternum is well developed and has two laciniae.

There are 20 identified species belonging to genus *Zercon*, described by Blaszak (1979); Moraza (1991); Ramadan (1992); Urhan and Ayyildiz (1993, 1994, 1996 a,b); Balan and Vinnik (1993) and Balan (1994). The present species is most similar to *Zercon dzobavi* sp. n. (Balan and Vinnik, 1993) in the followings:

1- Chelicerae, palpi, epistome and hypostome.
2- Shape of ventral shields and its number of setae.
3- End of all legs and types of their setae.

But they differ in the following characters:

1- Division of dorsal side.
2- Number and shape of dorsal setae.
3- Absence of ventroglandularia.
4- Location of the first pair of dorsal pores.

See Table (2): So, the present species is a new one and has its own diagnostic and specific characters

Diagnostic characters of the second species:

Host: Wild marine sponge.

Distribution of the host: Red Sea, Egypt

Location of the mite inside the host: within the pores of the host body.
Specific characters:

1- The dorsal side of the present species divides into two plates and carries 25 pairs of simple setae and two pairs of large pores.
2 - The ventro glandularia and ventral large pores are absent.
3- The first pair of dorsal pores is situated on the anterior part of the posterior dorsal plate.

The nomenclature of the species:

The name of the second species is referred to the network reticulation on the dorsal side of the body.

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Fig.1 : Female *Planodiscus furcatus* n. sp. ,

A- dorsal view
B- ventral view
C- right palp
D- palpal apotele
E- chelicera
F- epistome
G- tritosternum
H- hypostome
I- hyaline flange of leg I
J- legs from I - IV

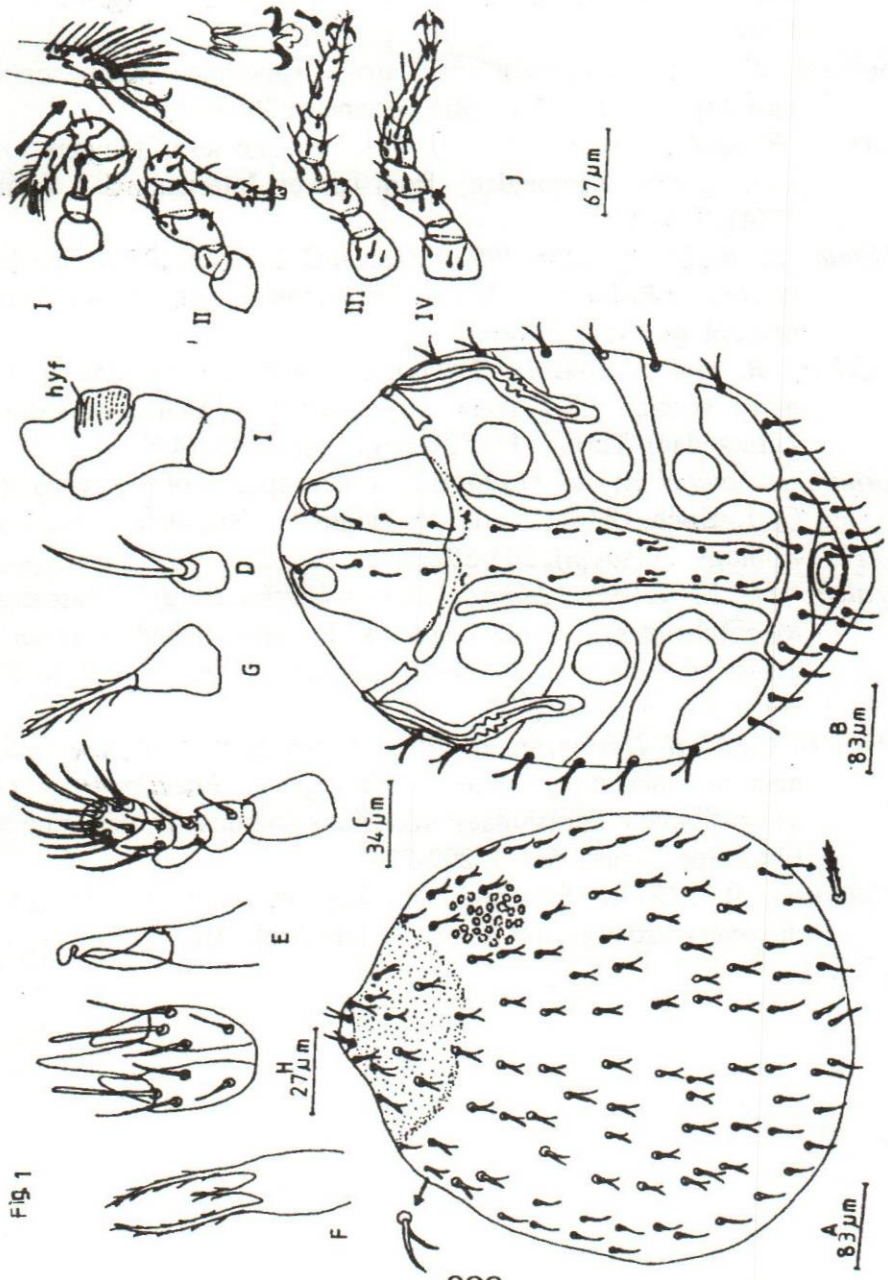

Fig. 1

Fig. 2 : Male *Planodiscus furcatus* n. sp.
A- dorsal view B- ventral view C- right palp
D- palpal apotele E- chelicera F- hypostome
G- legs from I-IV

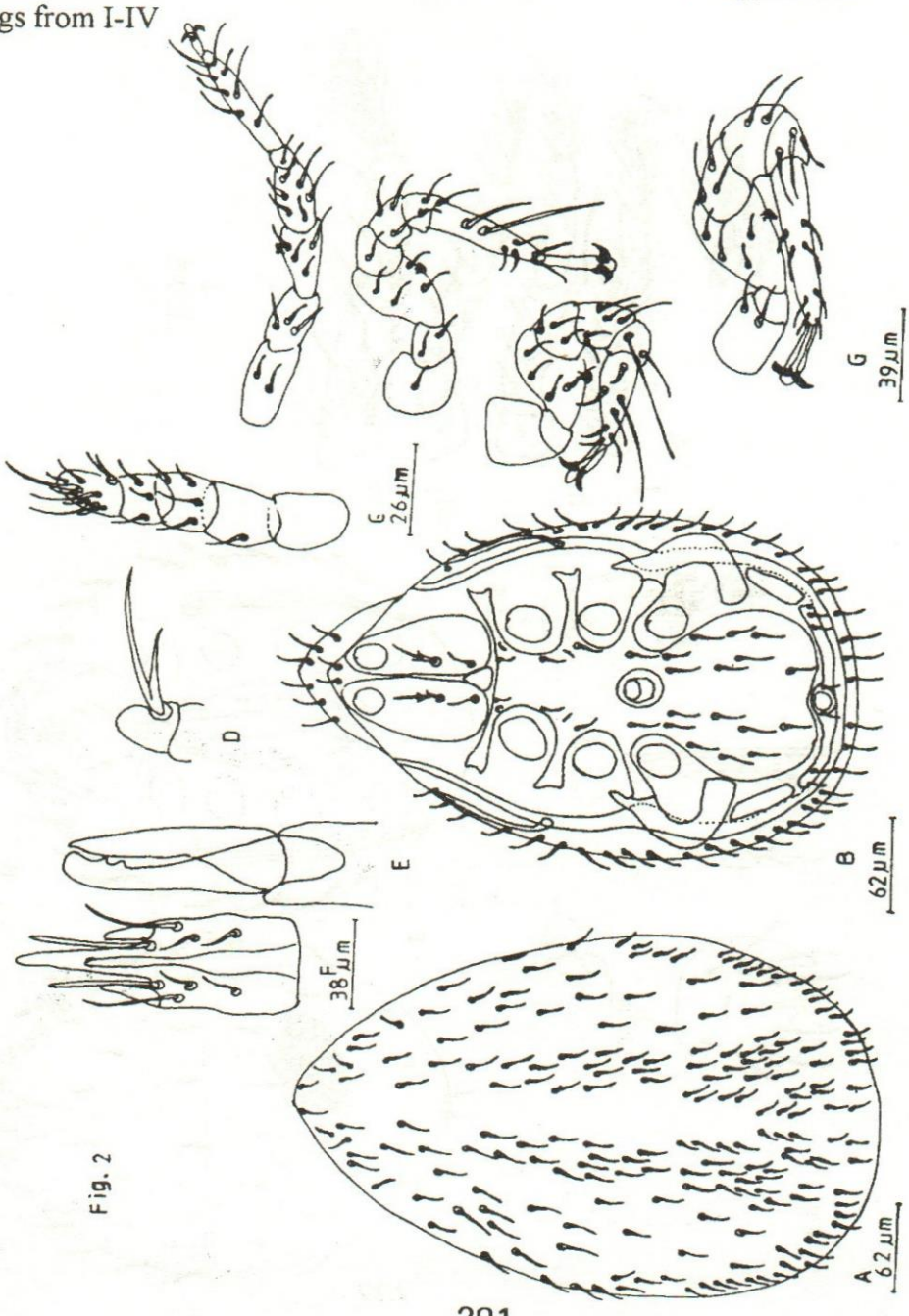

Fig. 2

Fig. 3 : Male of *Zercon reticulatus* n. sp.,

A - dorsal view
B- ventral view
C- right palp
D- palpal apotele
E- chelicera
F- epistome
G- tritosternum
H- hypostome
I- legs from I-IV

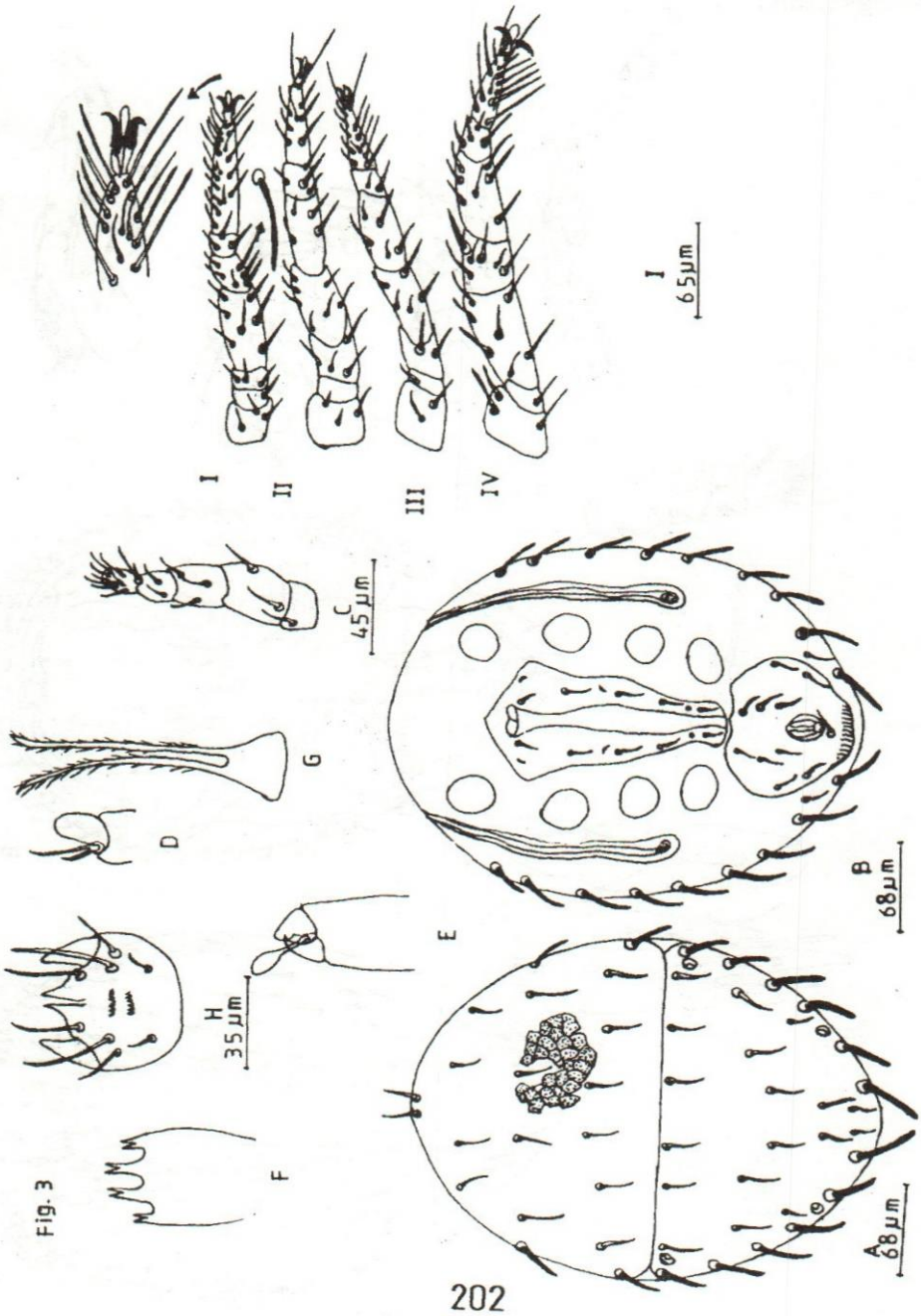

Fig. 3

Plate 1 : Photographs of the two species showing:
A ventral view of female *Planodiscus furcatus,* fp: foveolae, hf: holdfast
B enlarged part of (A) showing gnathosoma and leg I. ,
C ventral view of male *Planodiscus furcatus*, fp: foveolae, hf: holdfast
D ventral view of male *Zercon reticulatus*. ,

Pl.1

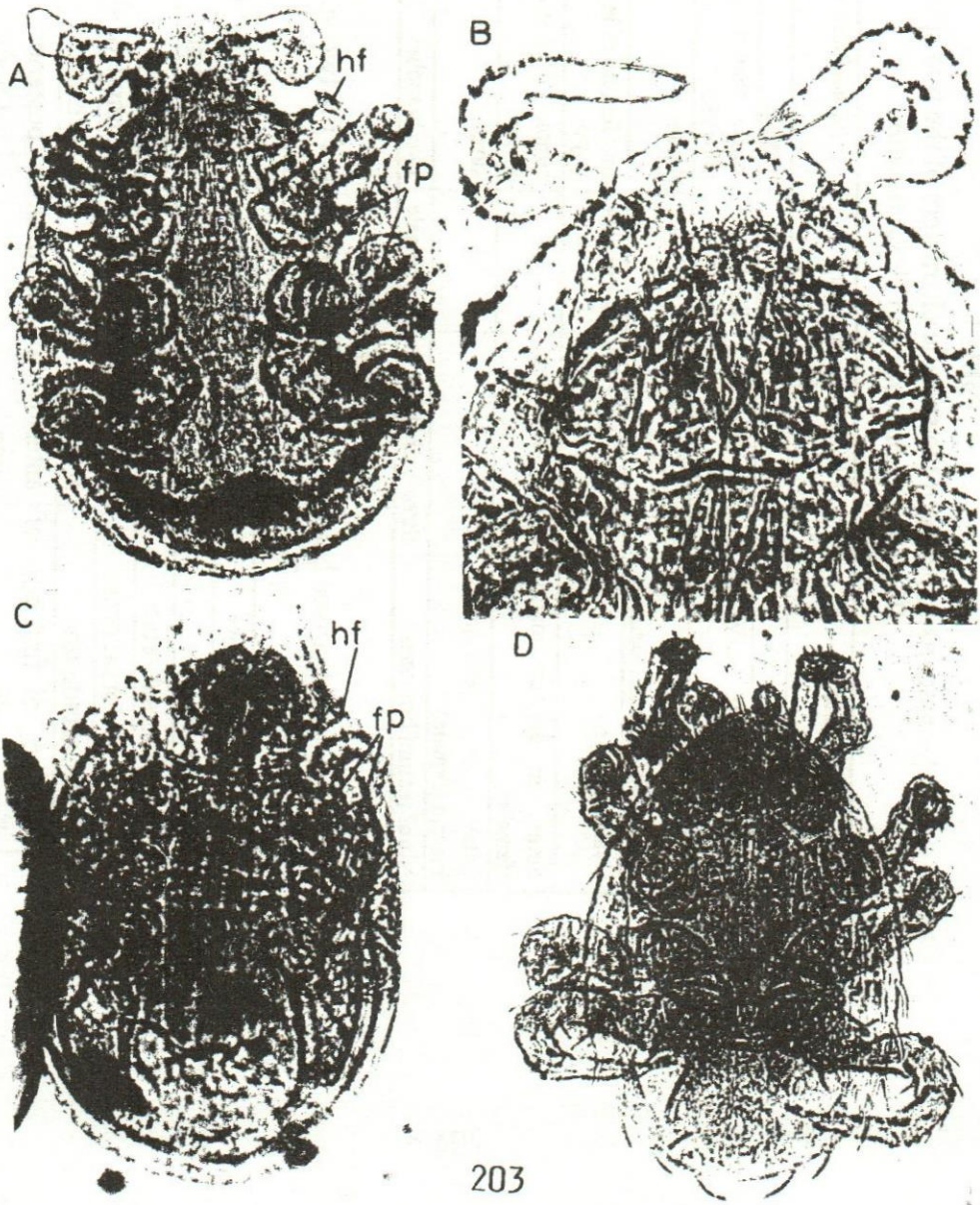

Table 1

A comparison between the specific characters of the two species *Planodiscus furcatus* and *P. squamatim.*

Characters	*Planodiscus furcatus*		*Planodiscus squamatim*	
	Female	Male	Female	Male
Ventrianal plate L/W in microns	broader than long 75x166	like female 22x124	longer than broad 500x280	like female 470x273
Number of setae on sternigenital shield (female)	6 pairs		4 pairs	
Hyaline flange	on femurs of all legs	like female	on femurs of legs II-IV	like female
Setae on dorsum margin (female)	serrated & forked		simple & distaly forked	
Setae on ventrolateral margin (female)	forked		simple	
No of tectum branches	three branches	like female	two branches	like female

Table 2

Acomparison between the specific characters of the two species *Zercon reticulatus* and *Z. dzobaviv.*

Characters	*Zercon reticulatus*	*Zercon dzobavi*
Dorsum	two plates	one plate
No. of dorsal setae	25 pairs	34 pairs
Shape of dorsal setae	hard thick & small	simple & short
Ventroglandularia	absent	present
location of first pair of dorsal pores	anterior part of posterior plate	posterior margin of the body