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CARABODES FOLIATUS N. SP. A NEW SPECIES OF ORIBATID MITE FROM CATALONIA (SPAIN)  
(ACARI, ORIBATEI)  
BY M. J. MORELL *

Summary: A new species of oribatid mite is described in this paper, under the name of Carabodes foliatus. The sensillus is a thick band, covered with thorns, with the terminal third folded up and inwards over the two proximal thirds. There are two elevated regions on the posterior side of prodorsum, each one bears a pair of protuberances on its posterior margin. The interlamellar and notogaster setae are wide, leaf-shaped, they have dentate margins, and they are covered with thorns on the upper surface.

Resumen: Se describe una nueva especie de ácaro oribatido con el nombre de Carabodes foliatus. El sensillo es una cinta recubierta de espinas, cuyo tercio distal se pliega sobre los dos tercios proximales, al dirigirse hacia arriba y hacia dentro. Las setas interlamelares y notogástricas son anchas, foliáceas, de borde dentado, y provistas de espinas en su superficie anterior. Presenta dos regiones elevadas en la región posterior del prodorsum, cada una provista de dos protuberancias en su borde posterior.

Résumé: Une nouvelle espèce d’oribate est décrite sous le nom de Carabodes foliatus. Son sensillus est une bande épaisse, recouverte d’épines, avec le tiers terminal replié vers le haut et l’intérieur au-dessus des deux tiers proximaux. Le prodorsum possède du côté postérieur deux régions surélevées, chacune portant une paire de protubérances sur son bord postérieur. Les poils interlamellaires et notogastriques sont larges, foliiformes, ils ont des bordures dentées et sont recouverts d’épines sur leur face supérieure.

Carabodes foliatus n. sp.  
(Figs. 1-5)

Number of specimens: 9 adults.  
Location: Cala San Francisco, Gerona, Catalonia, Spain. Acaros 2, 24-xi-57.  
Dimensions: length 468-492 µm, width 300-336 µm.

Prodorsum: Rounded rostrum. Rostral setae smooth, curved inwards.  
Lamellar setae arising on outer margin of lamellae, at short distance of lamellar cusps, ciliated on their external surface, and strongly curved over the rostral margin.  
Lamellae with narrow cusps that are extended over the rostrum. The inner margin of lamellae seems to be serrate, this shape may be optical.

* Museo Nacional de Ciencias Naturales, Calle de J. Gutierrez Abascal, 2. 28006 Madrid (Spain).

appearance of the two longitudinal rows of foveolae arranged close to the lamellae.

Interlamellar setae leaf-shaped, with dentate apex, and covered with small thorns.

The whole surface has a microsculpture formed by very minute dots. The interlamellar surface presents a different aspect on its anterior and on its posterior part. The anterior part shows a longitudinal row of foveolae at each side, being only punctulate in the middle. On the posterior part there is an elevated region at each side, with a tuberculate surface; these tubercles form transversal dark bands at the level of the insertions of the lamellar setae. The surface between these elevated regions is reticulate on its anterior part.

The lamellae are covered with foveolae, as well as the lateral prodorsal surface.
Bothridia large, directed outwards.

The sensillus is a thick band, directed horizontally outwards, with the distal third curved up and inwards, over the two proximal thirds. It is covered few and short thorns, difficult to discern, except on

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1

100 \( \mu \text{m} \)

2

Fig. 1-2: *Carabodes foliatus* n. sp.
1. — Dorsal side. 2. — Ventral side.
the upper surface of the folded third, where it is furnished with abundant, thick, and stiff thorns.

The cervical hollow is limited anteriorly by the posterior margin of the elevated regions, that protrude over the cervical hollow, forming each one a pair of big and rounded protuberances, being the external the biggest.

Notogaster: It is sculptured with a polygonal net enclosing rounded tubercles similar to the prodorsal ones, regular in shape and distribution. All the surface is dotted as the prodorsum.

There are ten pairs of notogastral setae, their bases are narrow, but they become wider at the apices. They are leaf-shaped with dentate margins, the upper surface is covered with thorns. Some setae have the apex folded under the rest of the seta, seeming to be shorter, with a rounded apex. The four pairs of marginal setae are shorter and thinner than the dorsal ones.

Ventral side: Epimeral formula [3-1-3-3]. Setae 4c very long (24.4 µm), setae 3c long (17.8 µm), the rest are short, (8.8 µm), all of them with few and short cilia.

Surface sculpture with light foveolae, that are small on the epimeral region, and bigger and more irregular on the rest of the ventral surface. The ventral surface is punctulate like the prodorsum and notogaster.

Four pairs of genital setae, inserted near the internal margin of each plate. All the setae are long, curved towards the posterior margin of the body, they are thin, and some are flagelate. In some mites they appear broken.

One pair of aggenital setae, that are of the same length as the genital ones.

Three pairs of short anal setae. Two pairs of anal setae, longer than adanals, but shorter than the genital and aggenital ones.

The surface of the genital and anal plates shows very small foveolae, so tiny that they seem to be dots.

Legs: They do not show any important differential characters. Antiaxial surfaces of femora I and II, and trochanters and femora III and IV are foveolate.

Types: holotype and paratypes are preserved in the collection of the Natural Science National Museum (Museo Nacional de Ciencias Naturales), Madrid, Spain.

DISCUSSION

Some characters of several well known species of the genus Carabodes are similar to those of the new one, but the new species is easily distinguished as follows:

C. affinis Berlese, 1913

Berlese's species has a club-shaped sensillus, with rounded apex. The notogastral surface presents foveolae surrounded by a polygonal sculpture, instead of tubercles. The posterior part of prodorsum has two elevated regions with a tuberculate surface, but without a pair of protuberance on the
posterior margin of each one. The notogastral setae are very similar in both species.

*C. aerolatus* Berlese, 1916

The original description is short, and without good drawings, but SELLNICK (1960), emphasizes the cylindrical shape of notogastral setae, that are not leaf-shaped as in *C. foliatus*. BERNINI (1970), remarks that the sensillus is club-shaped, the notogastral surface aerolate, without any protuberances on the posterior margin of prodorsum, and interlamellar setae long, with sharp apex.

*C. marginatus* Michael, 1884

In MICHAEL’s species the prodorsal elevations are absent. It has no protuberances on the posterior margin of prodorsum, the sensillus is short, and widening from the base to the apex, and interlamellar and notogastral setae are cylindrical.

*C. montanus* Bernini, 1979.

The notogastral sculpture is very similar in both species, but BERNINI’s species has no protuberances on the posterior margin of the elevated regions of prodorsum, sensillus slightly spindle-shaped, different prodorsal sculpture, cylindrical interlamellar and notogastral setae, and ventral sculpture with foveolae on the epimeral region, and tubercles on the rest.

*C. quadrangulus* Bernini, 1979

The sensillus is very similar to that of the new species. All the surface of *C. quadrangulus* is covered with very small granules, the prodorsal elevations are narrowed posteriorly with their posterior margin convex; the notogastral setae are cylindrical, and covered with abundant cilia.

*C. ornatus* Storkań, 1925

The STORKAŃ’s species has no elevated regions on prodorsum, the sensillus is shorter and the interlamellar and notogastral setae are narrower than in the new species.

BERNINI (1982) remarks than *C. forsslundi*, described by SELLNICK and FORSSLUND (1953), is a synonym of *C. ornatus*.

*C. hispanicus* Pérez-Iñigo, 1965

The prodorsal and notogastral sculptures are similar in both species. Notogastral and interlamellar setae have thorns, become wider at the apices, and have dentate margins, but in *C. hispanicus* they are not leaf-shaped. Both of them are easily distinguished by the apophysis on the anterior margin of notogaster, that are present in *C. hispanicus*, and absent in the new species, as well as the different shape of the sensillus.

*C. chirstlus* Mahunka, 1987

This species shows a great similarity to the new one in the following characters:

1. Two elevated regions on the posterior part of prodorsum, with two pairs of rounded protuberances on their posterior margin. These areas are larger and more developed in *C. foliatus*.

2. Thin and long sensillus. In *C. chirstlus* the sensillus is slightly fusiform, in the new species all the length of the sensillus is of the same width, and it is covered with thorns, which are longer and more abundant on the upper surface of the folded third.

3. The posterior part of the interlamellar surface is ornamented by a polygonal sculpture. In *C. foliatus* the anterior part of this surface shows a longitudinal row of foveolae at each side, and it is only punctulate in the middle. In *C. chirstlus* the anterior part is smooth, after MANHUNKA’s drawings.

4. Polygonate notogastral sculpture with small tubercles. In *C. foliatus* all the dorsal and ventral surfaces are also punctulate; MAHUNKA only represents a punctulate structure on some tubercles of the prodorsal elevations.

5. Notogastral and interlamellar setae are spiculate. They are leaf-shaped, widening near the apex, which is sharp, and with dentate margins, in *C. foliatus*. On the contrary, these setae are thinner in *C. chirstlus*, and MAHUNKA draws the notogastral setae with rounded apex.

6. Ventral surface with foveolae, smaller on the epimeral region, and larger on the rest. *C. chirstlus* has longitudinal ribs along genital aperture that are absent in the new species.

The new species differs from *C. chirstlus* in other important characters, namely:
a. The lamellar surface is foveolate in the new species, and it is smooth in Mahunka's species.
b. The lamellar cusps are narrow in C. foliatus, and they are rounded in C. chirstlus.
c. C. foliatus is slightly wider than C. christlus both of them have the same width, but the new species is shorter.

The new species is well characterized by:
- The sensillus is a thick band with sharp apex. The terminal third is curved over the two proximal ones. It is covered with few and short thorns, except on the upper surface of the curved distal third, where it has long and abundant thorns.
- Two elevated and tuberculated areas on the posterior part of prodorsum, with two pairs of big and rounded protuberances on their posterior margin.
- Surface of lamellae foveolate. Cusps narrow.
- The interlamellar surface has two different sculptures; a longitudinal row of foveolae at each side, on the anterior part, and a small reticulate between the elevated areas, on the posterior part.
- Interlamellar and notogastral setae widening from the base to the apex, with dentate margins, and covered with thorns on their upper surface.

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