THE IDENTITY OF *KNEMIDOKOPTES LAEVIS* (RAILLIET, 1885) (ACARI : KNEMIDOKOPTIDAE)

BY

Kevin DODD *.

RAILLIET (1885) described a skin mite *Sarcoptes laevis* taken from a racing pigeon (" *pigeon messenger* ") affected with depluming itch. The bird originated from Brussels. He considered the mite to be most closely related to *Sarcoptes mutans* (ROBIN and LANQUETIN, 1859) which had been placed by some authors in the genus *Knemidokoptes*, (Furstenberg 1870.). *Sarcoptes laevis* differed from *Sarcoptes mutans* in having a simple striated cuticle without trace of any integumentary processes. Further, the male was provided with a pair of " copulatory suckers ". In 1887 RAILLIET gave a more extensive illustrated description of the mite. Of particular interest is the reference to the connection of the epimera 1 in the female by a transverse scleratized bar. He recognized two varieties of this species : the typical form he named *Sarcoptes laevis var columbae* and the variety found on poultry *Sarcoptes laevis var gallinae*. Measurements are given for both varieties. He considered that *S. laevis* was intermediate in form between *S. mutans* and *S. fossor* : No knemidokoptid mite with the combination of the characteristics noted by Railliet for *S. laevis var columbae* appears to have been collected subsequently. KUTZER (1964) in a review of the genus *Knemidokoptes* gives specific status to *Knemidokoptes laevis* (RAILLIET, 1885), and *Knemidokoptes gallinae* (RAILLIET, 1887).

FAIN (1966) in a re-evaluation of the family *Knemidokoptidae* (DUBININ, 1953) included the *Evansacarinae* as a subfamily and proposed two new genera in the *Knemidokoptinae*, namely *Procnemidocoptes* (type : *Procnemidocoptes janssensi*. Fain, 1966) and *Neocnemidocoptes* (type *Sarcoptes laevis var gallinae* Railliet, 1887).

In a more detailed study of the family *Knemidokoptidae* Fain and Elsen (1967) resdescribed *Sarcoptes laevis* (RAILLIET, 1885) from material taken from Troussart's collection in Paris. They considered the material to be syntypical and proposed a lectotype female from the collection. The mite described by them as *Neocnemidocoptes laevis* (RAILLIET) bears little resemblance to the descriptions and illustrations of *Sarcoptes laevis* by RAILLIET (1885 and 1887). For example, small regional cuticular denticulations are present on the dorsal and ventral surfaces of the body and there is no transverse sclerite connecting epimera 1 in the female. Additional material was provided by Prof. Guilhon of Alfort Veterinary College. The condition of the female in this material did not allow critical study, but in the male the authors could discern the presence of anal discs. The material from Troussart's collection which was considered to be syntypical was collected from a pigeon in Paris, whereas the type host/locality was a pigeon from Brussels. The discrepencies between the original description and the redescription leaves me in little doubt

* Faculty of Veterinary Medicine, University College, Dublin, Ballsbridge, Dublin 4, IRELAND.

that *Neocnemidocoptes laevis* ; FAIN and ELSEN, 1967 is not conspecific with *Sarcoptes laevis* (RAILLIET, 1885). The selection of the lectotype by FAIN and ELSEN (1967) is invalidated since the material is not syntypical.

Recently I have collected large numbers of knemidokoptid mites from a Collared Dove *(Streptopelia decaocta)* at Dunlaoire, Co. Dublin, Ireland. The females, males and larvae of this material agree with the original description of *Sarcoptes laevis* (RAILLIET, 1885) and I consider the material to be conspecific with *Sarcoptes laevis*.

DESCRIPTION AND SYSTEMATICS OF *Sarcoptes laevis* RAILLIET 1885.

According to the present generic concepts within the Knemidokoptinae *Sarcoptes laevis* (RAILLIET) cannot be accommodated in any of the three genera *Procnemidocoptes, Knemidokoptes, Noecnemidocoptes*. I propose a new genus for its reception.

Mesoknemidokoptes gen. nov.
Type : *Sarcoptes laevis* Railliet, 1885.

Integument of all stages covered with fine striae, but lacking scales or projections of any kind. Epimera of legs 1 of the female connected by a transverse scleratized bar. Adults have 5 pairs of anal setae. Legs composed of five free segments. Female tarsi of first two legs provided with a vestigial ambulacral pedicle, but no pulvillus. Anus terminal. Adanal suckers present in the males. One pair of genital setae present in female.

Mesoknemidokoptes laevis (Railliet) comb. nov.

FEMALES.

25 mature females were examined to determine their size range. (Table 1). The following description is based on an individual measuring 357 μ × 314 μ.

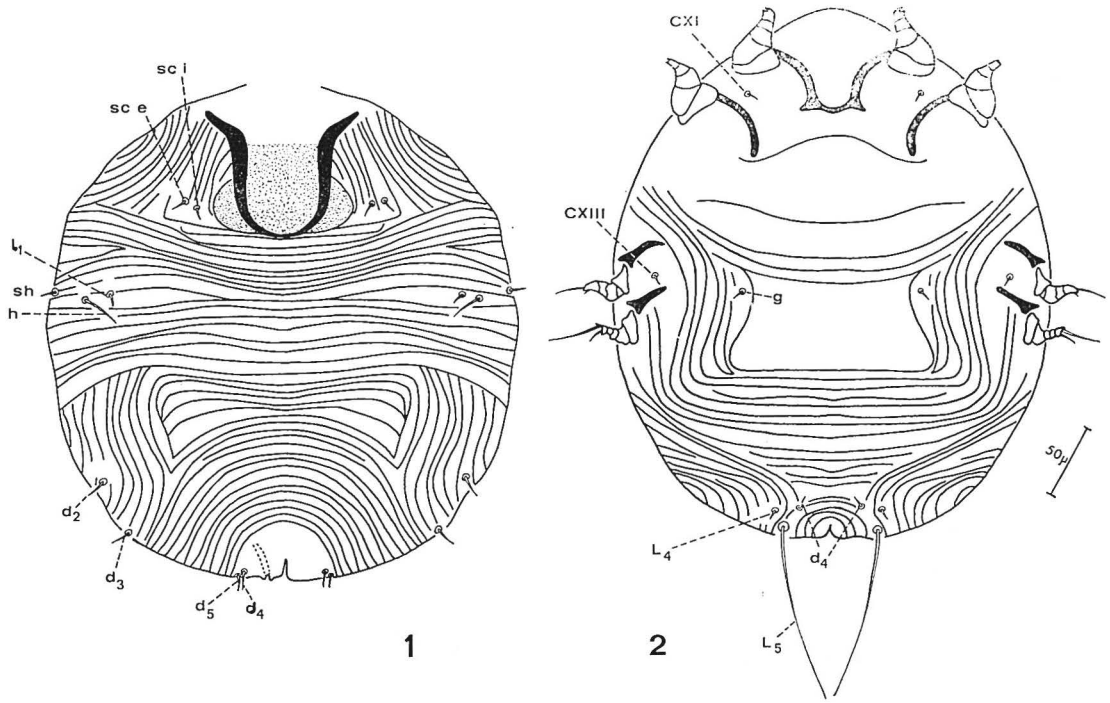
TABLE 1. Size range of female *Mesoknemidokoptes laevis*, Railliet 1885.

Length. μ	*Breadth.* μ	*Length.* μ	*Breadth.* μ	*Length.* μ	*Breadth* μ.
329	294	305	270	270	223
364	315	364	294	352	305
376	305	305	294	275	247
247	247	315	258	265	310
247	305	329	282	315	290
315	270	315	235	290	247
319	264	333	278	295	245
315	284	379	308	256	247
320	274	305	280		

Dorsum (fig. 1). The dorsal and ventral cuticle is regularly striated without interruptions, additions or embellishments of any kind, large or small. There is a semi-circular area of the dorsal cuticle, 48 μ × 60 μ, devoid of striae, in the midline starting at the posterior border.

The dorsal shield is well developed and finely punctated along its entire length and measures 67 μ × 41 μ (ratio 1.6 : 1). The punctate area extends laterally on each side of the edges of the dorsal shield in its posterior half. The adscutal setae arise from separate bases and measure 6 μ (*sci*) and 9 μ (*sce*). A seta (*h*) 32 μ is present just in from the border of the level of leg III. Another seta (*l1*) 3 μ long is present 16 μ in from the larger seta. A short seta (*sh*) 3 μ long is also present on the lateral margin of the body at about the level of the seta (*h*). There is a seta 16 μ (*d3*) long present on the postero-lateral border, 64 μ from the origin of the main anal seta (*l5*). The anus is postero-ventral. A prominent copulatory pore is present to the left of the anus.

Five setae are present on each side of the anus. Two pairs are present on the ventral surface measuring 4 μ long (*l4, d4*). The large anal setum (*l5*) measures 112 μ long. Two small seta arising very near each other and measuring 9 μ and 6 μ (*d4, d5*) are present just to the inside of the large anal seta on the posterior-border of the mite.



FIGS. 1-2. — *Mesoknemidokoptes laevis* (Railliet) :
1) dorsum female ; 2) venter female.

Venter. The vulva is transverse (fig. 2), situated in the anterior 1/3 of the mid-line and measures 96 μ long. The epimera of legs 1 are joined by a strongly chitinized bar measuring 32 μ long. The epimera of legs II are well developed, 64 μ long and terminate near the vulva.

A very small seta (*CXI*) measuring 3 μ long is present lateral to the epimera of leg 1. In the region of the epimere of leg III a small seta (*CXIII*) 6 μ is present. Another very small seta the same size (*g*) is present 32 μ towards the mid line.

Legs : Each leg is composed of 5 separate and distinct segments, the tibia and tarsus being free in every case. There is a vestigial ambulacral stalk but no pulvillus present on the tarsi of legs I, and II.

MALES.

Six males were measured to obtain a size range, (table II). The following description is based on a mite measuring 177 μ × 112 μ.

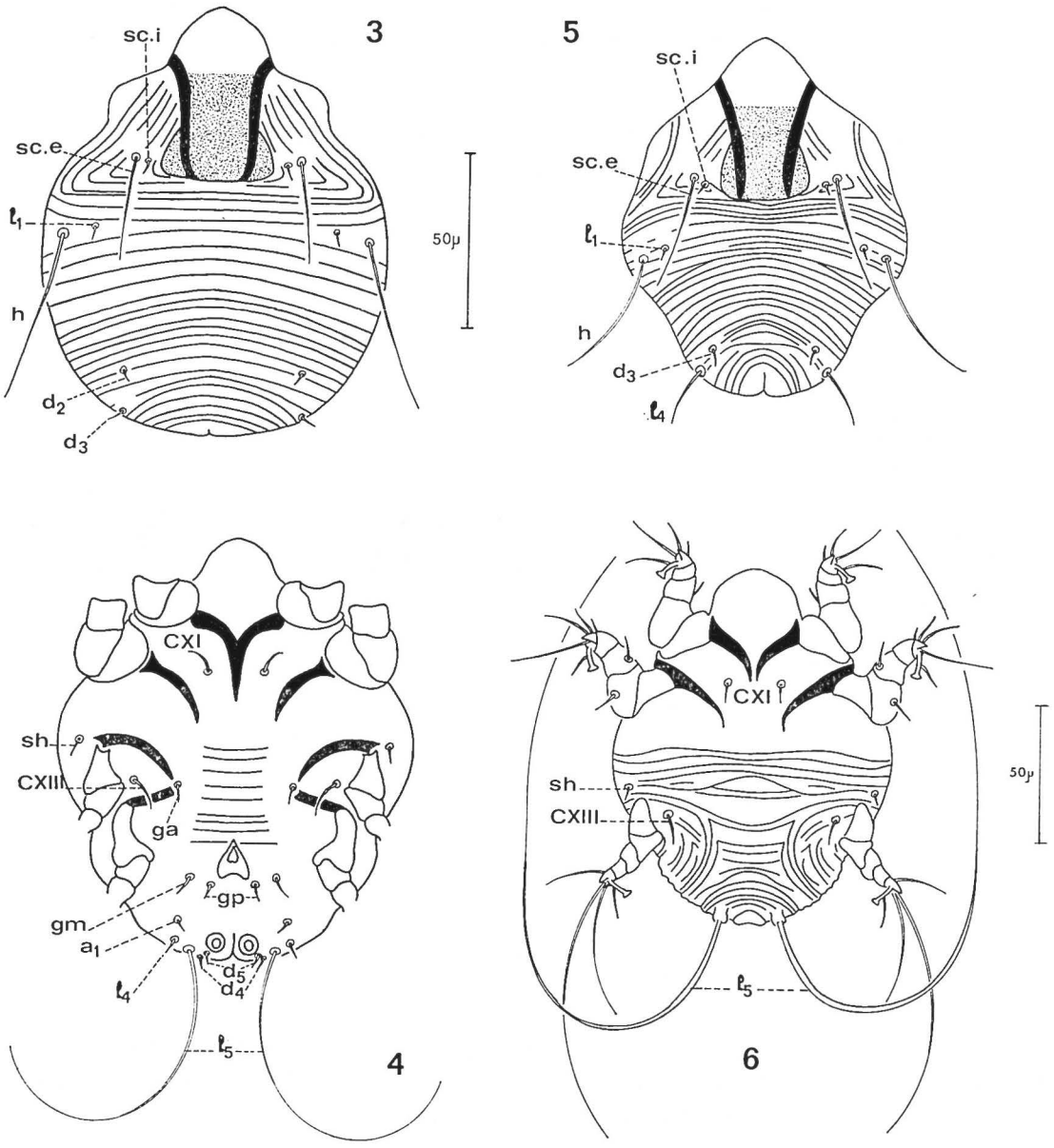


FIG. 3 à 6. — *Mesoknemidokoptes laevis* (Railliet) :
1) dorsum male ; 4) venter male ; 5) dorsum larva ; 6) venter larva.

Dorsum (fig. 3). The cuticle is regularly striated without interruptions, embellishments or attachments of any kind. The dorsal shield is well developed with straight edges, measuring 25 μ × 22 μ long (ratio almost 1 : 1). There is a transverse fold in the cuticle 10 μ behind the dorsal shield, extending almost the full width of the mite. The adscutal seta arise from separate bases measuring 5 μ inner, and 50 μ outer. There is a long seta (*h*) originating on the dorsal surface measuring 64 μ about the level of leg III. Two small seta measuring 6 μ and 9 μ each are present internal to this large seta. A seta (*d3*) measuring 14 μ is present on the lateral margin approximately half-way between the anus and leg IV. The anus is terminal.

Venter : (fig. 4). The cuticle is finely striated especially in its posterior region without any interruptions or attachments. Two anal discs, measuring 6 μ in diameter are present. The penile apparatus measures 12 μ long × 9 μ, and is centrally placed between the fourth pair of legs.

The epimera of legs 1 are joined in the mid line for much of their length. The joined length is 16 μ long. The epimera of legs II are well developed measuring 38 μ long. The epimera of leg III is curved slightly backwards. The epimere of leg IV curves slightly forward. The tips of the epimera are joined by a slightly chitinized area.

Ventral setae. 5 setae are present on each side of the anal region, the largest measuring 160 μ. There are 2 setae on each side of the mid line approximately 6 μ long each at the level of the epimere of leg III. (*CXIII* ; ga.).

Two small setae 6 μ are present between the epimera of legs I and II (*CXI*). There are 2 small seta (*gm, gp*) each 6 μ long present on each side of the penile apparatus.

Legs. Each leg is composed of 5 segments and carries an unjointed ambulacral stalk and sucker. Leg I has 7 seta easily discernible by the light microscope.

Leg II has 6 seta visible. Leg III has one very long seta 90 μ long and 4 other seta present. Leg IV also has a long seta 96 μ long.

TABLES II and III. Size range of *Mesoknemidokoptes laevis*, Railliet 1885.

II *Male*		III *Larvae*	
Length. μ	*Breadth.* μ	*Length.* μ	*Breadth.* μ
145	112	145	96
145	112	129	106
171	128	154	96
177	112	135	100
171	128	145	90
140	115		

Larvae. Five larvae were measured for size range. (Table III). This description is based on a specimen measuring 129 μ × 106 μ.

Dorsum. Fig. 5. The cuticle is finely striated especially in the posterior region with no interruptions or additions of any kind. A well marked transverse cuticular line is present immediately behind the dorsal shield. The dorsal shield is well developed with almost straight edges and measures 32 μ × 25 μ. (Ratio 1.3 : 1). A small area devoid of striae is present on the anal region measuring 8 μ. The anus is ventro-posterior.

The adscutal seta arise from separate bases and measure 45 μ (*sce*) and 6 μ (*sci*). A large seta (*h*) 48 μ long arises from the lateral margin of the body mid way between legs II and III. A small seta (*l1*) 6 μ long is present medial to this seta.

Venter (Fig. 6). The cuticular striae are not interrupted, nor do they have any attachments or irregularities. The striae are particularly prominent in the posterior half of the body. The epimera of legs I do not meet.

Ventral seta. Seta (*CXI*) measures 12 μ long. Two other seta, (*sh* and *CXIII*) are present, measuring 8 μ and 16 μ. Two large anal seta (*l5*) measure 141 μ long each.

Legs. Each leg is composed of 5 segments terminating in a claw. Each leg is equiped with an unjointed ambulacral stalk and sucker.

Localities : from a racing pigeon (" pigeon messenger "), Brussels, Belgium, and a Collared Dove (*Streptopelia decaocta*) Dunlaoire, Co. Dublin, Ireland.

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