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# Taxonomic consequences of the polymorphism found in scutacarids (Acari, Scutacaridae)

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(With 8 figures)

**Abstract**

Owing to a distinct female polymorphism found in the course of breeding experiments in a number of species of the genus **Archidispus** it has become necessary to create new generic diagnoses for **Archidispus** and **Imparipes.**

Study of polymorphic species of the genera **Archidispus, Lamnacarus** and **Scutacarus** led to the discovery of new synonymies: The female of **Archidispus soosi** (Mahunka, 1967) is the nonphoretic morph of **Archidispus armatus** (Karafiat, 1959); the female of **Lamnacarus coprophilus** Mahunka, 1968 is the nonphoretic morph of **Lamnacarus ornatus** Balogh & Mahunka, 1963; **Scutacarus fimetarius** Delfinado, Baker & Abbatiello, 1976 (description based on phoretic female) and **Scutacarus subfimetarius** Momen & El-Bagoury, 1989 (description based on nonphoretic female) are synonymous with **Scutacarus longitarsus** (Berlese, 1905).

It is shown that the subspecies rank of **Scutacarus longitarsus dentatus** Mahunka, 1967 is not justified.

Further consequences that could arise from polymorphism in the family Scutacaridae are discussed.

## 1. Introduction

Recent breeding experiments showed that species of different genera of the mite family Scutacaridae are polymorphic (Ebermann 1991 and unpubl. 1)). All observed cases have the occurrence of two morphologically distinctly different female forms in common (female dimorphism). One of the two is always modified as a wandering form (phoretic morph) and shows characteristics suitable for phoretic behavior. The results of the comparative morphological analyses of the two female forms will be reported elsewhere (Ebermann 1991 and unpubl.). This paper is concerned with the taxonomic consequences of this polymorphism.

1) Paper in prep.

## 2. Material

Types and other comparative material was made available by different institutions (see Acknowledgements). Detailed data on **S. longitarsus**, whose findings are mentioned in the text, will be given elsewhere (Ebermann unpubl.).

## 3. Results

### 3.1. Genera studied

#### 3.1.1. **Archidispus** Karafiat, 1959, **Imparipes** Berlese, 1903

Breeding of phoretic females was performed for the first time with **Archidispus minor** (Karafiat, 1959) and **A. magnificus** (Karafiat, 1959) as well as **A. bembidii** (Karafiat, 1959), **A. armatus** (Karafiat, 1959) and **A. amarae** Kurosa, 1970; in all these species a previously unknown female dimorphism was found (Ebermann 1991 and unpubl.). The morphological detailed analysis of the newly discovered "nonphoretic" female morph showed that it differs, sometimes drastically, from the phoretic morph (phoretomorph) particularly with regard to thickness of the integument, width of the sternal plates, position and form of the setae and morphology of the extremities. A very typical characteristic of the nonphoretic female morph is the form of leg pair I: the tibiotarsus of the comparatively elongated leg is slender and unclawed (Fig. 1). The phoretic female, on the other hand, has shorter and broader legs I. The thickened tibiotarsus is always equipped with a well developed claw and a basal opposing piece (Fig. 2).

The **Archidispus** species described to date can be divided into three groups:

Group I: Species with two known female morphs: **A. amarae** Kurosa, 1970; **A. armatus** (Karafiat, 1959); **A. bembidii** (Karafiat, 1959); **A. magnificus** (Karafiat, 1959); **A. minor** (Karafiat, 1959).

Group II: Species described from nonphoretic females with as yet unknown phoretic female forms. **A. abolitus** (Mahunka, 1969); **A. certus** Mahunka, 1974; **A. compteae** Mahunka, 1988; **A. delfinadoi** Mahunka & Rack, 1977; **A. haarloevi** (Karafiat, 1959); **A. longitarsus** (Delfinado, Baker & Abbatiello, 1976); **A. magyari** Mahunka, 1974; **A. tarsalis** (Delfinado, Baker & Abbatiello, 1976).

Group III: All other species, some 45 of which appear in the literature, are described on the basis of phoretic females, their corresponding nonphoretic morphs are unknown.

The discovery of the morphological discontinuities described above has important effects for taxonomy at the generic level.

**Archidispus** was classified by Karafiat (1959) as a subgenus of **Imparipes** Berlese, 1903, and then as a genus by Rack (1973). Kurosa (1983) discusses the differential-diagnostic problems that occur with the differentation of species of the genus **Archidispus** from those of the genus **Imparipes.** He finds (p. 315), "..that the elongation of the proximal portion of tarsus IV is a character not always reliable in discriminating **Archidispus** from **Impari-**

**pes** and that the conformation of the claw and its associated apparatus of leg I is much more important for classifying them". He follows with revised diagnoses of **Archidispus** and **Imparipes**, according to which species with slender tibiotarsus I and small or a b s e n t claw belong to the genus **Imparipes**, and those with a stout tibiotarsus I and stronger claw to the genus **Archidispus**. Of the eight species described to date that have a clawless leg I, Kurosa mentions only **Archidispus haarloevi** by name and transfers the species into the genus **Imparipes**. The breeding results mentioned in the introduction, however, show that the structures on leg I (tibiotarsus and claw) used by Kurosa to separate the two genera are of no taxonomic value, as they are m o r p h - s p e c i f i c characteristics at the species level. Rigorous application of Kurosa's newly defined generic diagnoses would mean that a nonphoretic morph without a claw on leg I would be placed in the genus **Imparipes** and the phoretic morph of the same species in the genus **Archidispus**. Thus the generic diagnoses as presently formulated would be useless for further work with the genera **Archidispus** and **Imparipes**.

The possibility cannot be excluded that the occurrence of dimorphic females is a "transitional" biological group characteristic for **Archidispus**, and so could also be typical for the genus. Whether or not this is the case, the existence of polymorphism that has been found in some species must find its way into a modified generic diagnosis of **Archidispus**.

### 3.1.1.1. New definition of the generic diagnoses of **Archidispus** and **Imparipes**.

Genus **Archidispus** Karafiat, 1959

Type species: **Imparipes (Archidispus) minor** Karafiat, 1959.
Female: There can be an intraspecific female dimorphism with nonphoretic and phoretic females.

P h o r e t i c f e m a l e: Tibiotarsus of leg I (Fig. 2) more or less thick, distally with a powerful claw whose basal opposing piece has a long, sharp tooth. One or more pairs of setae on hysterosomal tergites and/or sternal plates may be either distinctly thickened at the base or otherwise modified.

N o n p h o r e t i c f e m a l e: Femur and genu of leg I longer than wide, tibiotarsus slender, no claw present (Fig. 1). Setae on hysterosomal tergites and sternal plates not modified (except 2 b).

Tarsus IV usually very elongated at the proximal and distal portions in both morphs. In some species, the proximal portion of tarsus IV of the phoretic female is rather shortened and widened (the situation in nonphoretic females of these species is unknown), but intermediate forms of this characteristic also occur. Pretarsus present in both morphs.

Male: The monomorphic males of **Archidispus** show no morphological characteristics that would permit discrimination of **Archidispus** from **Imparipes**.

Genus **Imparipes** Berlese, 1903.

Type species: **Imparipes histricinus** Berlese, 1903.

No female dimorphism has as yet been found.
Female: Tibiotarsus of leg I generally not very thick. Claw of leg I well developed to very small, sometimes absent; when present it is always distinctly pedicellate, with apex attenuated and often recurvate. Inner margin of pedicell basal with a bluntly pointed or round-tipped, sclerotized process which is directly obliquely distad. In some species with greatly reduced claw on tibiotarsus I, the process may be missing or at least indiscernible.

Tarsus IV is usually more or less shortened and thickened in the proximal portion; pretarsus present. In some species, the distal portion of tarsus IV is reduced and the pretarsus is missing. In the subgenus **Telodispus** the distal portion of tarsus IV is greatly reduced and the pretarsus is absent.

Discussion
The newly recurring problem of the lack of morphological discontinuity between these two genera leads to the question as to whether Rack's (1973) elevation of **Archidispus** to a genus should be retained. In spite of obvious morphological difficulties, I find that there are a number of reasons in favor of doing so. The great majority of the **Archidispus** species described so far show a preference for a moist environment (the shores of streams, rivers and lakes) and thus form a relatively closed ecological unit. Rack (1973) and Kurosa (1983) also support the genus ranking with ecological criteria. Both authors mention that the species of the genus **Archidispus** prefer beetles (especially Carabids and Staphylinids) as phoretic hosts, while species of the genus **Imparipes,** as inhabitants of a different environment, show a much more common preference for diverse Hymenoptera, such as ants and bees.

Another criterion which, at least for the time being, favours the retention of genus rank of **Archidispus** is a behavioral observation valid for all the **Archidispus** species that I have bred (Ebermann unpubl.). This concerns the precopulative behavior of the male. They stay with the quiescent larvae on the substrate until the adult female hatches and then copulate immediately. During this waiting period the males frequently push their forebody under the quiescent larvae, but the latter are neither lifted nor carried about, as is always the case with **Imparipes** and **Scutacarus** males (Norton & Ide 1974, Eickwort 1979, Ebermann 1982, Schousboe 1986). If further breeding experiments with **Archidispus** and **Imparipes** species should show that this behavior is indeed genus specific, this biological difference would be another argument for the retention of the genus rank for **Archidispus.**

### 3.1.1.2. New synonymy

**Archidispus armatus** (Karafiat, 1959)
**Imparipes (A.) soosi** Mahunka, 1967; s y n. n o v.; 1967a, 396-397, Fig. 5-6 (Bugac, Hungary; Type: Hungarian Museum of Natural History, Budapest).

Reasons: In the course of breeding experiments with **Archidispus armatus,** the existence of two completely different female forms was discovered

(Ebermann unpubl.). There is a phoretic morph (described by Karafiat 1959 as "**armatus**") and a nonphoretic morph. My comparison of the latter form with type material (HNHM) for **Archidispus soosi** Mahunka, 1967 showed complete morphological agreement, i.e. phoretic and nonphoretic forms of the same species have been described under different species names and included in the literature. According to the rules for nomenclature, the morph described in 1959 as **armatus** would have priority and the name **soosi** is to be rejected. The new information on the occurrence of two female morphs makes it possible to classify findings mentioned in the literature or citations in identification keys as one or the other morph:

P h o r e t i c m o r p h s: **Imparipes (Archidispus) armatus:** Karafiat 1959, 669-671, Fig. 16a-b, near Erlangen, FRG, type material no longer available (Karafiat, pers. comm.); Balogh & Mahunka 1962, 512 (Hungary); Mahunka 1965, 359 (identification key), Plate 1, Fig. 19-20; 1972a, 93 (ident. key), Plate 49, Fig. H-J; Sevastianov 1978, 53 (ident. key), Plate 18, Fig. 137a-b; **Archidispus armatus:** Rack 1973, 324 (ident. key); Mahunka 1981a, 346 (Hungary); Mahunka & Zaki 1984, 77 (Hungary).

N o n p h o r e t i c m o r p h s: **Imparipes (A.) soosi:** Mahunka 1972a, 93 (ident. key), Plate 49, Fig. D-G; Sevastianov 1978, 53 (ident. key), Plate 18, Fig. 136; **Archidispus soosi:** Rack 1973, 323 (ident. key); Mahunka & Zaki 1984, 77 (Hungary).

### 3.1.2. **Lamnacarus** Balogh & Mahunka, 1963

#### 3.1.2.1. New synonymy

**Lamnacarus ornatus** Balogh & Mahunka, 1963.
**Lamnacarus coprophilus** Mahunka, 1968; s y n. n o v.; 1968, 124, Fig. 7-10 (Mórahalom, Hungary; Type: Hungarian Museum of Natural History).

Reasons: Analysis of 405 animals from a single substrate sample showed that there were 85% **ornatus** females (with well-developed claw on tibiotarsus I), 10% **coprophilus** females (with extremely reduced claw) as well as 5% females which showed all the transitional forms of the above-mentioned female forms with regard to the "claw I" characteristic (Ebermann unpubl.). Behavioral experiments could further confirm that **ornatus** is the phoretic female form and **coprophilus** the nonphoretic female form of one and the same species. The name **coprophilus** is the younger synonym and thus is to be rejected.

So for this species as well the new information on the two homologous species should influence the classification of findings appearing in the literature and other citations.

P h o r e t i c m o r p h s: **Lamnacarus ornatus:** Balogh & Mahunka 1963, 61-63, Fig. 1-2, 7 (Nagykórös, Hungary; Type: Hungarian Museum of Natural History); Mahunka 1964, 104 (Hungary); 1965, 379 (ident. key), Plate 14, Fig. 13-14, Plate 16, Fig. 27; 1970, 153 (ident. key), Fig. 8: N,O; 1972a, 149 (ident. key), Plate 80, Fig. A-D; 1972b, 379 (France); Sevastianov 1972, 145 (USSR); 1978, 75 (ident. key), Plate 33, Fig. 250a-b; Kurosa 1980, 241, Fig. 108-D (Japan).

N o n p h o r e t i c m o r p h s: **Lamnacarus coprophilus:** Mahunka 1972a, 149 (ident. key), Plate 80, Fig. E-H; Sevastianov 1978, 75 (ident. key), Plate 33, Fig. 252a-c.

### 3.1.3. **Scutacarus** Gros, 1845

In the genus **Scutacarus** as well, field findings as well as additional breeding experiments showed a number of polymorphic species (Ebermann unpubl.). Once again there are nonphoretic and phoretic females that differ particularly in the formation of leg I and there above all in a significant size difference in the claw. In most of the species (among other **Scutacarus acarorum** (Goeze, 1780) and **S. deserticolus** (Mahunka, 1969), however, this characteristic as well as the purely statistically demonstrable morphic differences in the lengths of certain body setae are only of minor taxonomic significance.

In the species **Scutacarus longitarsus** (Berlese, 1905), the morphic difference found is more pronounced in that a modified claw on legs II and III in the phoretic female permits fast and certain determination of which morph is involved (Ebermann unpubl.). Comparison of breeding material from **S. longitarsus** with material from other sources also showed new synonyms.

#### 3.1.3.1. New Synonymies

**Scutacarus longitarsus** (Berlese, 1905)
**Scutacarus fimetarius** Delfinado, Baker & Abbatiello, 1976; s y n. n o v.
**Scutacarus subfimetarius** Momen & El-Bagoury, 1989; s y n. n o v.

**Scutacarus fimetarius:** Delfinado, Baker & Abbatiello 1976, 115; Figs 17-21 show the phoretic female morph; both morphs are to be found in the type and reference material (Coeymans/New York, USA; Type: New York State Museum, Albany).

Reasons: I checked all the material on **S. fimetarius** on deposit at the New York State Museum and Cornell University (Ebermann unpubl.). Detailed morphological analysis of 78 slides of the type series and 14 more referende slides showed that there is n o difference between **Scutacarus fimetarius** and **Scutacarus longitarsus** described in Italy. B o t h morphs are to be found in the **fimetarius** material. The figures in the original description of **fimetarius** are based on a phoretic female; the morph-specific differences in the structure of the claws of legs II and III apparently went unnoticed and therefore are not taken into account.

**S. longitarsus** was not mentioned in the original description of **S. fimetarius** and it may be concluded that **longitarsus** was not known to the authors.

**Scutacarus subfimetarius:** Momen & El-Bagoury 1989, 42; Figs 1A-E show the nonphoretic female (Egypt; Giza/Cairo; Type: National Research Centre, Dokki/Cairo).

Reasons: In the description **subfimetarius** is only differentiated from **S. fimetarius**; as in the previous case, **S. longitarsus** Berlese is not mentioned. The differentiation is as follows (p. 42): "It can readily be distinguished from **fimetarius** by setae d short, e shorter than f, e and f barbed, a smooth sensillus and setae 3b not reaching insertion of 4b". My examination of the single paratype (which is a female of the nonphoretic type) confirms the identy I had suspected with **S. longitarsus** for the following reasons:

a) "..setae d short ..".
In contrast to the findings of species diagnose of **S. subfimetarius**, the setae d are not shorter than in **fimetarius.** In the embedded paratype of **subfimetarius** one setae d is oriented horizontally and the one on the other side of the body is bent, extends beyond the optical plane and therefore only appears to be shorter!

b) ".. e shorter than f ..".
The setae e are also significantly shorter than f in **fimetarius** (Ebermann unpubl.).

c) ".. e and f barbed ..".
The extraordinarily weak barbs on e and f seen on the paratype of **subfimetarius** are also evident in **fimetarius.**

d) ".. a smooth sensillus ..".
The sensillus or trichobothrium is usually - depending on the position of the embedded mite covered by the anterior sternal plate and/or trochanter II so that fine structures cannot always be determined with certainty and often are only to be seen on flattened material. On the paratype slide of **subfimetarius**, the left trichobothrium appears to be smooth but the right one clearly shows fine barbs.

e) The description of **S. subfimetarius** is based on a nonphoretic female and that of **S. fimetarius** on a phoretic female. The significantly shorter ventral barbs on the nonphoretic form are a characteristic morphic difference for **S. longitarsus** Berl. (Ebermann unpubl.). This is also the basis for the "species" difference, ".. setae 3b not reaching insertion of 4b .." between **fimetarius** and **subfimetarius** formulated by Momen & El-Bagoury. What they see as a difference in species is thus only the expression of the morphological difference between two female forms of the same species, i.e. **S. longitarsus** Berl.

### 3.1.3.2. **Scutacarus longitarsus dentatus** Mahunka, 1967

The morpological analysis of the two female morphs of **S. longitarsus** that I bred showed a tooth-like scale on the trochanter of leg IV (Fig. 3). Examination of other material put at my disposal from European countries, East Asia, North America and the Galapagos Islands showed the same structure (Figs 4-6). According to Mahunka 1967 (p. 159) the subspecies **S. longitarsus dentatus** is characterized "especially in the presence of the sharp spine of the trochanter of leg IV". Comparison of the above-mentioned material available to me with the type material (Fig. 7) for **dentatus** (holotype and paratype, whereby the description mentions only the finding of o n e specimen) confirms the structural agreement of the trochanter tooth in question.

Mr. A. Hlebaina (Graz) was kind enough during his stay at the Istituto Sperimentale per la Zoologia Argraria in Florence to check the type and documentary material of the nominate form deposited there of **Scutacarus**

**longitarsus** for the existence of a tooth-like scale. He examined all six slides mentioned under "**Disparipes longitarsus** Berl." in the "Catalogue of the Berlese Acaroteca" (Castagnoli & Pegazzano 1985) and informed me as follows: The slides designated as type Berlese's handwritten notes and labeled "28/27, t, legno Marcio, Tiarno, 20.XI.1904" is in very poor condition. The trochanters of leg pair IV are broken and show no details in this area. The slides with the numbers 126/46, 126/47 and the one with the note "buon" and number 125/50 are in such poor condition that a detailed examination is not possible. The extremities can be seen well on slide 126/49 with the notation "**Disparipes longitarsus** Berl., dal dorso, Firenze, Cascine, letamai". The tooth-like scale can readily be seen on the right leg IV (Fig. 8). This decisive subspecies characteristic is thus also present in the nominate form. My analysis of the other characteristics of the two **dentatus**-type slides also failed to show a n y differences from the nominate form. The division into subspecies thus is not justified.

## 4. D i s c u s s i o n

The (morphological) polymorphism of many species has often long remained undiscovered and has led to taxonomic difficulties in almost all classes of animals, and above all to a flood of synonymies (Mayr 1967). With the first proven existence of polymorphism in Tarsonemina by Moser & Cross (1975), the conspecifity of species belonging to different genera (**Siteroptes** and **Pediculaster**) was discovered. In the mite family Scutacaridae, future discovery of further polymorphic species could lead to taxonomic problems even greater than indicated by the current state of information.

The absence of a claw on leg I is not a characteristic that is limited to isolated related groups of scutacarids; species with reduced or absent claws occur in nearly all species-rich genera. Until now, only a few species have been more closely studied and in some cases found to be polymorphic (Ebermann 1991 and unpubl.). From the information available today, for some related groups the occurrence of polymorphic species may be very common of even obligatory. The genus **Archidispus** is the prime example here. The morphic differences occuring in this group may be extreme and have already led to taxonomic confusion (see above); similar problems may be expected for the future. It is harder to predict what will happen with the genus **Scutacarus.** All of the species of **Scutacarus** that have as yet been identified as polymorphic show a female dimophism that with respect to the extent of differences between morphs is less pronounced than in **Archidispus** (Norton 1975, Ebermann unpubl.). In this context, however, reference must be made to the species group **Variatipes.** Karafiat (1959) classifies **Scutacarus** and **Variatipes** as a subgenus of the genus **Scutacarus** with the diagnoses (p. 664): "The tibiotarsus I bears a claw" and "The tibiotarsus I is clawless", respectively. Mahunka (1965) found the claw characteristic to be useless for differentiation of higher categories and eliminated the subgenus **Variatipes.** Mahunka himself (i.a. 1981b), Mahunka & Mahunka-Papp (1982) as well as other authors, e.g. Delfinado, Baker & Abbatiello (1976) and Ebermann (1979) nonetheless continued at least in some cases to use **Variatipes.**

More than 80 species lacking a claw on tibiotarsus I have been described to date and sometimes classified as **Variatipes.** The developmental cycle is not known for a single one of these species; the few breeding attempts that have been made to date have all failed (Ebermann unpubl.).

The questions thus remains open as to whether the lack of claws in the **Variatipes** group is related to the phenomenon of polymorphism, or is due to something else, such as a gradual reduction in the course of long-term disuse in the nonphoretic species. If the first should be the case, the species description would be based on the nonphoretic female form. The phoretic female form would still be unknown. Future investigations will have to use breeding experiments to clarify the developmental cycles and the related polymorphism question of different species groups. Until this has been accomplished, the subgenera **Variatipes** and **Scutacarus** should not be used.

There are indications suggesting that there are other polymorphisms in this family not related to phoresy. A number of species could be named in this context. **Scutacarus eucomus** (Berlese, 1908) for example shows extremely high intraspecific morphological variability. The forms **minimus** (Rack, 1974) and **magnalatus** (Mahunka, 1978) described as subspecies of **eucomus** are probably only to be seen as morphs of a polymorphic species of **eucomus,** and this is likely also the case for the "aberrant" female form published by Ebermann (1980) and since then refound. Similar examples that fall into this category are **Scutacarus pectisetus** (Ebermann, 1984) and the three probably conspecific species **Symbolacrasis acutimera** Mahunka, 1973, **Symbolacrasis hypostigma** Mahunka, 1973 and **Symbolacrasis synmixta** Mahunka, 1973. All the species in this section (except **S. eucomus**) in which polymorphism could be suspected have in common that their description is based on the evidence of only one or two examples. It is completely clear that with such small numbers of individuals any conclusions on the question of polymorphism will have to be purely speculative. This is particularly a problem for the taxonomist who has only conserved material to work with. Species found in tropical regions where collections are seldom made are often represented by only one or a few individuals. In these cases, morphometric and statistical studies simply are not possible; species that suggest polymorphism are thus subject to a taxonomic uncertainty. This leads to the questions as to the extent to which a taxonomy that is based exclusively on the evaluation of morphological characteristics can be in a position to answer the questions at hand.

Rack & Kaliszewski (1985) also take up this question and suggest (p. 280) ".. to put a stop to undifferentiated studies or the pure description of morphological characteristics ..". These authors suggest that autapomorphies be sought, which could suggest that two different females might possibly belong to one species. This would offer a chance - limited thought it be - to detect as yet undiscovered polymorphisms. In some cases, and here the genus **Archidispus** should again be mentioned as an example, breeding experiments will offer the only possibility of providing conclusive results.

## A c k n o w l e d g e m e n t s

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Mr. A. Hlebaina (Graz) was so kind as to check the type material from the Berlese collection in Florence.

Ms. E. Lamont (Graz) translated the manuscript into English.

## Z u s a m m e n f a s s u n g

Aufgrund eines im Verlaufe von Zuchtexperimenten entdeckten, stark ausgeprägten Weibchen-Dimorphismus bei mehreren Arten der Gattung **Archidispus** ist es nun erforderlich, für **Archidispus** und **Imparipes** neue Gattungsdiagnosen zu erstellen.

Die Untersuchung polymorpher Arten der Gattungen **Archidispus**, **Lamnacarus** und **Scutacarus** führte zur Aufdeckung neuer Synonymien: Das Weibchen von **Archidispus soosi** (Mahunka, 1967) ist die nichtphoretische Morphe von **Archidispus armatus** (Karafiat, 1959); das Weibchen von **Lamnacarus coprophilus** Mahunka, 1968 ist die nichtphoretische Morphe von **Lamnacarus ornatus** Balogh & Mahunka, 1963; **Scutacarus fimetarius** Delfinado, Baker & Abbatiello, 1976 (Beschreibung basierend auf phoretischem Weibchen) und **Scutacarus subfimetarius** Momen & El-Bagoury, 1989 (Beschreibung basierend auf nichtphoretischem Weibchen) sind synonym mit **Scutacarus longitarsus** (Berlese, 1905).

Es wird begründet, daß der Subspezies-Rang von **Scutacarus longitarsus dentatus** Mahunka, 1967 nicht gerechtfertigt ist.

Über weitere Konsequenzen, die es im Zusammenhang mit dem Polymorphismus in der Milbenfamilie Scutacaridae geben könnte, wird diskutiert.

Figs 1-2: **Archidispus minor** (Karafiat, 1959), leg I. - (1) nonphoretic female, (2) phoretic female.

Figs 3-8: **Scutacarus longitarsus** (Berlese, 1905), female. - Specimens of very different geographic origin show a trochanter IV with tooth-like extension (arrow): (3) Austria, (4) Germany, (5) North America, (6) Galapagos Islands, (7) Congo, Paratypus from "dentatus", (8) Italy, slide 126/49 from Berlese Acaroteca.


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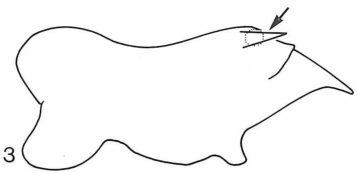
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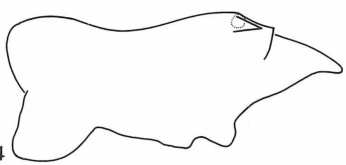
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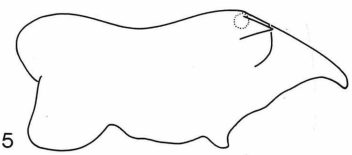
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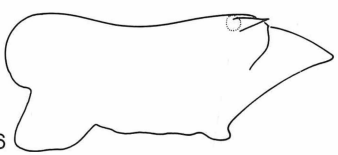
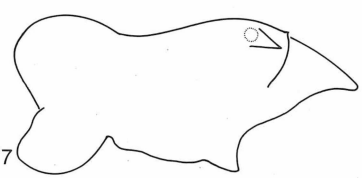
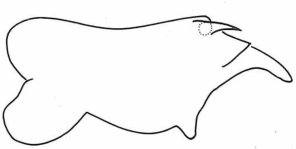

6


7


8

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