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IMPARIPES (IMPARIPES) PSELAPHIDORUM N. SP., A NEW SCUTACARID SPECIES PHORETIC UPON AFRICAN BEETLES (ACARI, SCUTACARIDAE; COLEOPTERA, PSELAPHIDAE)

by Ernst EBERMANN *

ABSTRACT: Imparipes (Imparipes) pselaphidorum n. sp. is described. Females were removed from Pselaphids (Coleoptera) collected in Tanzania. Males and larvae are still unknown.

Three Imparipes-species described from locations in Egypt in the recent past must be designated as nomina dubia; the species in question are Imparipes nataliae Sevastianov & Abo-Korah, 1985; Imparipes elbanbyi Sevastianov & Abo-Korah, 1985 and Imparipes elmarzoukyi Sevastianov & Abo-Korah, 1985.

INTRODUCTION

Examination of Pselaphids (Coleoptera) from Tanzania in the collections of the National Museum of Kenya (Nairobi) showed that on a number of beetles there were phoretic mites that proved to belong to the family Scutacaridae. Through the kind offices of Dr. G. Rack, (Hamburg), this interesting material was passed on to me for determination. It turned out to be a matter of a new species, which is described in the following.

Imparipes (Imparipes) pselaphidorum n. sp.
(Figs. 1-4)

Female: Body length 260-306 μm (average of 10 specimens 284 μm), holotype 260 μm; body width measured from the posterior margin of the clypeus 250-300 μm (average of 12 specimens 279 μm), holotype 260 μm; anterior width of the posterior sternal plate 120-150 μm (average of 10 specimens 137 μm), holotype 130 μm; width of clypeus 320-370 μm (average of 8 specimens 347 μm), holotype

* Institut für Zoologie, Abteilung für Morphologie und Ökologie, Karl-Franzens-Universität, Universitätsplatz 2, A-8010 Graz (Österreich).

320 μm. Body surface finely stippled, the free margin of clypeus shows very fine longitudinal stripes. Cupulae ia and ip small, rounded.

Dorsum (Fig. 1): Setae c1 short and very thin, smooth; c2 much longer and thicker, with only a few barbs, with hair-tube. Setae e > h2 > f > d > h1; d, e, f, h1 and h2 strongly barbed; distal end of d, f and h1 with strong tip; setae e and h2 distal with fine, hair-like tip.

Venter (Fig. 2): Apodeme II strongly developed, complete; apodeme IV well developed, does not attain half the width of the posterior sternal plate, apodemata III and IV are not present. Setae 1a, 1b and 2a barbed, 2b smooth and dagger-shaped. Of the setae 3a, 3b and 3c, 3a are the longest and stoutest, all strongly barbed. Setae 4a inserted before 4b, the last ones reach the posterior edge of the body or extend beyond it, 4b longer and thicker.
than 4a, all barbed; setae 4c about the same length and thickness as 4b, barbed. Setae ps1 and ps3 equally thick, ps3 are longer, both pair of setae are strongly barbed; ps2 tiny.

**Gnathosoma**: Oval, dorsal with three pairs of setae, the inner pairs are barbed, the outer pair is tiny and smooth; palps with two setae each. On the gnathosoma only one pair of solenidia visible.

**Trichobothrium** (Fig. 3a): Thin stemmed, club-shaped, distal with fine barbs; the anterior bothridial seta hook-like.

**Leg I** (Fig. 3b): Tibiotarsus with well developed claw and 4 solenidia. Solenidion $\omega_2 > \omega_1 > \varphi_2 > \varphi_1$; $\varphi_1$ club-shaped. Formula of setae: trochanter 1, femur 3, genu 4, tibiotarsus 16.

**Leg II** (Fig. 3c): Formula of setae: trochanter 1,
Fig. 3: *Imparipes (I.) pselaphidorum* n. sp. (Holotype). — a) trichobothrium; b) leg I; c) leg II; d) leg III (right), tarsus with only 5 setae; e) leg III (left), tarsus with 6 setae (normal number).
femur 3, genu 3, tibia 4, tarsus 6. Tibia and tarsus have one solenidion each, of these, the tarsal one is long and thin, the tibial one is shorter and thicker. Tarsus with two claws and a broad empodium.

Leg III (Fig. 3d, e): Formula of setae: trochanter 1, femur 2, genu 2, tibia 4, tarsus 6. Tibia with a small solenidion. Tarsus with two claws and a broad empodium.

Leg IV (Fig. 3f): Formula of setae: trochanter 1, femur 2, genu 1, tibia 3, tarsus 6. Tibia with a short, thin solenidion. Tarsal seta $q$ short and smooth, $p$ is the longest tarsal seta, $s$ extends to the distal end of praetarsus, seta $t$ is varying in length (Fig. 4), but does not reach the joint between tarsus and praetarsus. Praetarsus with two tiny claws and a small, stretched empodium.

Male and larva: Unknown.

Diagnosis: Imparipes pselaphidorum n. sp. is reminiscent owing to the formation of setae $c_1$ and $c_2$ of the species Imparipes (I.) setifer Mahunka, 1979 (Bolivia, Ghana), Imparipes (I.) chacoensis Mahunka et Mahunka-Papp, 1982 (Paraguay), Imparipes (I.) heterotrichus Mahunka, 1963 (Argentina), Imparipes (I.) zilui Mahunka, 1967 (Australia) and Imparipes (I.) discordens Mahunka, 1972 (New Guinea). Imparipes pselaphidorum n. sp. is most similar to the last-mentioned species from New Guinea, but differs from it in the following features:

- Setae $c_2$ with hair-tube
- Setae $e > h_2 > f > d > h_1$
- Setae $f$ and $h_1$ distal with strong tip
- Setae $p_2$ tiny, smooth
- Trichobothrium distal with fine barbs
- Anterior bothridial seta long, hook-like
- Trochanter IV short, compact
- Tarsus IV with 6 setae

Remark: Scutacarid species of the genera Imparipes (Parimpipes) and Scutacarus from Tanzania have been described, but there have been no descriptions of a species of the subgenus Imparipes.

Sources of the material:

12 ♀♂, found phoretically on not more precisely determined beetles of the genus Centrophthalmus.
of the worldwide beetle family Pselaphidae are facultatively or strictly myrmecophilous, such beetles could be potential transport hosts for myrmecophilous scutacarid mites as well. But the pselaphid genus *Centrophthalmus*, to which the phoresy host of *Imparipes pselaphidorum* n. sp. belong, are, however, known with one exception to be nonmyrmecophilous (pers. comm. G. COULON). Thus nothing can be said at present as to why a phoretic relationship can develop between *I. pselaphidorum* and its transport host.

**Table 1**: Number of *Imparipes* species known to be phoretic and/or associated with other arthropods.

<table>
<thead>
<tr>
<th>Arthropod group</th>
<th>Number of <em>Imparipes</em> sp.</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saltatoria</td>
<td>1</td>
<td>MAHUNKA, 1977</td>
</tr>
<tr>
<td>Dermaptera</td>
<td>1</td>
<td>TELGÄRDEH, 1904.</td>
</tr>
<tr>
<td>Formicoidea</td>
<td>42</td>
<td>BERLÈSE, 1903; PAOLI, 1911; WILLMANN, 1951; STORRÁN, 1940; KARAFIAT, 1959; DELFINADO &amp; BAKER, 1976; MAHUNKA, 1977; EBERMANN, 1980, 1981; and others.</td>
</tr>
<tr>
<td>Coleoptera</td>
<td>2</td>
<td>PAOLI, 1911; DELFINADO &amp; BAKER, 1978.</td>
</tr>
</tbody>
</table>

Morphological adaptations to phoretic behavior with the development of "phoretomorphs" and "normal" females, as found in *Scutacarus baculitarus agaricus* (see NORTON 1977) as well as *Scutacarus acarorum* and *Archidispus armatus* (EBERMANN, paper in prep.) are not known for *Imparipes* species. As only "phoretomorphic" females are available from *Imparipes pselaphidorum*, the occurrence of "normal", nonphoretic females of this species is uncertain.

The evaluation of morphological characteristics of species of the genus *Imparipes*, particularly the subgenera *Imparipes* and *Telodispus* is at present without doubt one of the main difficulties in Scutacarid taxonomy. Particular problems are posed by species belonging morphologically to the *histriceinus* group, as they tend to have relatively uniform characteristics, i.e. they are lacking remarkable, "good" specific characteristics. Species in this group also show considerable intraspecific variability in taxonomically important characteristics. The
actual extent of this variability is, however, not known in detail, so that in the end result it is difficult to differentiate the species involved reasonably well. Taxonomy that is essentially based on such “weak” characteristics as position of setae and their relative length and thickness, and where these sometimes are subject to intraspecific variability, requires careful and critical evaluation of the situation in each case. The matter is not made any easier by the fact that this was not always the case with erroneous descriptions, which not infrequently are confronted with poorly detailed and sometimes erroneous descriptions, which not infrequently are based on a single specimen. An example of this unfortunate practice is shown in the recent publication by Sévastianov & Abo-Karah (1985), which should not remain unmentioned in this context. The “descriptions” of species of various Scutacarid genera in this publication serve to burden the subgenus Imparipes with new *nomina dubia* in addition to all the preexisting uncertainties.

**New nomina dubia:**


**LITERATURE**


