

**Catalogue of the mite family Rhodacaridae Oudemans, with notes on the classification
of the Rhodacaroidea (Acari: Mesostigmata)**

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Abstract

The Rhodacaridae Oudemans are free living, cosmopolitan, edaphic mites, which are considered in the literature to be predators. The taxonomic concept of this family has changed considerably over time, making it very difficult for non-taxonomists to decide which species really belong to this family. Even taxonomists sometimes find it difficult to determine whether a given species belongs to this family or not, because many of the old descriptions are not sufficiently detailed. Also, the family placement of some genera has been very unstable. A historic review of the literature on the classification of the Rhodacaridae is presented. Diagnoses are given for the families of Rhodacaroidea is given, followed by a checklist of genera and subgenera for each family. The families included are Digamasellidae, Halolaelapidae, Laelaptonyssidae, Ologamasidae, Rhodacaridae and Teranyssidae. Diagnoses are given for the genera of Rhodacaridae, and a key for their identification, derived from a standardised database of character states. Finally, a list of species within each genus of this family was compiled, giving relevant taxonomic information about the respective types and providing references concerning nomenclatural changes in the literature, synonymy and redescriptions of each species. In total, 148 rhodacarid species and one subspecies are listed in this work, arranged in 15 genera. The most diverse genera are *Afrodacarellus* Hurlbutt and *Rhodacarus* Oudemans, each with about 20% of the valid species. Five of the genera are monotypic. Taxonomic confusion surrounds some groups of species, especially in the genus *Rhodacarus*. It appears that *Rhodacarus calcarulatus* Berlese, *R. coronatus* Berlese, *R. pallidus* Hull, *R. reconditus* Athias-Henriot and *R. roseus* Oudemans have often been misidentified, and these species

are in need of detailed revision. Twelve new combinations are proposed in this paper.

Afrogamasellus (Foliogamasellus) Karg, 1977 and *Afrogamasellus (Lalogamasellus)* Karg, 1977 are newly synonymised under *Afrodacarellus* Hurlbutt, 1974 and *Laelaptonyssus* Womerlsey, 1956 (Laelaptonyssidae) is newly synonymized under *Starkovia* Lombardini, 1947.

Keywords: Soil mites, catalogue, taxonomy, key, Rhodacaroidea

Introduction

The mite family Rhodacaridae Oudemans is a member of the superfamily Rhodacaroidea in the order Mesostigmata. The Rhodacaridae are free living, cosmopolitan edaphic mites found mainly in the top few centimetres of the mineral soil layer. They are often reported in ecological surveys of the arthropod fauna of agricultural soils (for example El Titi, 1984, 1986; Koehler, 1991), but they are also found in litter, mosses, lichens and other types of organic matter in contact with the soil. Rhodacarids are commonly mentioned in the literature as predators, but very few papers have dealt with their feeding behaviour. Some species have been found to feed on Collembola, nematodes, and mites (Karg, 1971; Lee, 1974; Walter *et al.*, 1988), and at least one species appears to have potential as a biological control agent for insect and mite pests in soil (Castilho *et al.*, 2009).

The taxonomic concept of the Rhodacaridae has changed considerably over time, making it difficult for non-taxonomists to understand which species belong to this group. Quite often, taxonomists also have difficulty in determining whether or not a described species belongs to this family, given that many of the old descriptions are not sufficiently detailed.

Oudemans (1902) established Rhodacarinae as a subfamily of Parasitidae Oudemans, to contain his new genus and species *Rhodacarus roseus* Oudemans, 1902. Halbert (1915) raised the subfamily to family level. Willmann (1935) described two new genera of Rhodacaridae, *Rhodacaropsis* Willmann, 1935 and *Rhodacarellus* Willmann, 1935. Oudemans (1939a) included *Rhodacarellus* in his newly-created family Gamasolaelaptidae Oudemans, but Vitzthum (1941) and Baker & Wharton (1952) included

all three genera in their concept of Rhodacaridae. Evans (1957) extended the concept of the Rhodacaridae, including in this family all genera of Mesostigmata having a 3-tined palp tarsal claw and a divided dorsal shield, namely *Leitneria* Evans, 1957, *Rhodacarus*, *Rhodacarellus*, *Halolaelaps* Berlese & Trouessart, 1889, *Saprolaelaps* Leitner, 1946, *Euryparasitus* Oudemans, 1902 and *Cyrtolaelaps* Berlese, 1887. He made no reference to *Rhodacaropsis*.

Willmann (1959) described the new genus *Rhodacaroides* Willmann, 1959, presumably in the Rhodacaridae, although he did not clearly state its family placement. Two new genera of Rhodacaridae were described in the early 1960's: *Allogamasellus* Athias-Henriot, 1961 and *Evanssellus* Ryke, 1961a. Ryke (1961b) described *Gamaselliphis* Ryke, 1961b as a subgenus of *Cyrtolaelaps*, and this subgenus was raised to genus level by Lee (1970).

Ryke (1962a) further expanded the concept of Rhodacaridae, including in this family all genera of Mesostigmata whose deutonymphs had separate podonotal and opisthonotal shields, even when the palp tarsal claw was 2-tined. He divided the family into two subfamilies, Rhodacarinae, containing species whose adults also had separate podonotal and opisthonotal dorsal shields, and Ologamasinae, whose adults had these shields fused. His subfamily Rhodacarinae included *Antennoseius* Berlese, 1916, *Asca* von Heyden, 1826, *Cyrtolaelaps*, *Evanssellus*, *Halolaelaps*, *Leitneria*, *Longoseius* Chant, 1961, *Rhodacarus*, *Saintdidieria* Oudemans, 1939b and *Saprolaelaps*. In this concept, the subfamily Ologamasinae included *Antennolaelaps* Womersley, 1956a, *Epiphis* Berlese, 1916, *Gamasiphis* Berlese, 1904, *Gamasiphoides* Womersley, 1956b, *Gamasitus* Womersley, 1956b, *Hydrogamasus* Berlese, 1892, *Laelaptiella* Womersley, 1956b,

Megaliphis Willmann, 1938, *Micriphis* Berlese, 1914, *Neogamasiphis* Trägårdh, 1952, *Ologamasus* Berlese, 1888, *Onchogamasus* Womersley, 1956a, *Pachyseius* Berlese, 1916, *Parasitiphis* Womersley, 1956b, *Periphis* Berlese, 1914, *Physallolaelaps* Berlese, 1908, *Queenslandolaelaps* Womersley, 1956a, *Sessiluncus* Canestrini, 1898 and *Trachygamasus* Berlese, 1906. Ryke (1962a) classified *Rhodacarellus* and *Rhodacaropsis* as subgenera of *Rhodacarus*, and *Gamasellus* Berlese, 1892, *Digamasellus* Berlese, 1905, *Euryparasitus* and *Gamaselliphis* as subgenera of *Cyrtolaelaps*. This very inclusive concept of Rhodacaridae included many genera that are now placed in other families.

Evans (1963) analysed the leg chaetotaxy of the free-living Gamasina, including the Rhodacaridae. In the initial part of that publication, he included the following genera in this family: *Asca*, *Cyrtolaelaps*, *Digamasellus*, *Euryparasitus*, *Gamasellus*, *Gamasiphis*, *Halolaelaps*, *Hydrogamasus*, *Ologamasus*, *Rhodacarellus*, *Rhodacarus* and *Sessiluncus*. However, after reviewing the leg chaetotaxy of these and other genera, he considered that *Asca*, *Halolaelaps* and *Digamasellus* probably did not belong to the same group as the other genera, which he called the *Rhodacarus*-group. The latter was characterised as having the following leg chaetotaxy: coxa 2, 2, 2, 1; trochanter 6, 5, 5, 5; femur 13, 11, 6, 6; genu 13, 11, 9, 10; and tibia 14, 10, 8, 10. Evans (1963) followed Ryke (1962a) in considering *Rhodacaropsis* a subgenus of *Rhodacarus*, but considered *Rhodacarellus* at the genus level.

Karg (1965) used a more restricted concept of this family. He considered the Rhodacaridae as mites having scleronoduli on the podonotal shield and males with a hook-shaped spermatodactyl, a group that included *Dendrolaelaps* Halbert, 1915, *Protogamasellus* Karg, 1962, *Rhodacarus* and *Rhodacarellus*. He described *Dendroseius* Karg, 1965 as subgenus of *Dendrolaelaps*; this subgenus was raised to genus level by

Hirschmann (1974). Between 1965 and 1968, several new genera of Rhodacaridae were described: *Notogamasellus* Loots & Ryke, 1965, with subgenera *Notogamasellus* (*Notogamasellus*) Loots & Ryke, 1965 and *Notogamasellus* (*Podonotogamasellus*) Loots & Ryke, 1965, *Gamasellopsis* Loots & Ryke, 1966, *Gamasellevans* Loots & Ryke, 1967, *Neogamasellevans* Loots & Ryke, 1967, *Afrogamasellus* Loots & Ryke, 1968 and *Paragamasellevans* Loots & Ryke, 1968. Emberson (1968) reviewed the history of the family, using a definition that included some genera that are now placed in other families.

Lee (1970) characterised the Rhodacaridae largely based on the type of leg chaetotaxy used by Evans (1963) to define his *Rhodacarus*-group. In addition, he characterised the family as including males and females with separate podonotal and opisthonotal shields and the palp tarsal claw usually 3-tined, never with associated hyaline flap, and if 2-tined, then with four ventral setae on tibia I; female with posteriorly truncate genital shield separated from a conspicuous ventrianal shield; seta *st4* usually on the sternal shield (cited as sterno-metasternal shield); and male with distally free spermatodactyl; presternal genital orifice; and seta *av* of femur II larger than that of the female and usually considerably modified as a conspicuous spur. Lee (1970) considered that in this sense the Rhodacaridae corresponded approximately to the Gamasellini of Hirschmann (1962), Rhodacaridae plus Cyrtolaelapidae Berlese of Johnston (1968), Rhodacaridae (in part, excluding Digamasellidae Evans) and Gamasellinae of Karg (1965) and Rhodacaridae (in part, excluding some Ascidae Voigts & Oudemans, the Digamasellidae and the Halolaelapidae Karg) of Ryke (1962a). Lee (1970) divided the family into six subfamilies: Gamasiphinae, containing *Euepicrius* Womersley, 1942, *Gamaselliphis*, *Gamasiphis*, *Gamasiphoides*, *Hydrogamasus*, *Laelaptiella* and the new genus *Caliphis* Lee, 1970;

Laelaptonyssinae, containing *Laelaptonyssus* Womersley, 1956b; Ologamasinae, containing *Allogamasellus*, *Cyrtolaelaps*, *Euryparasitus*, *Evanssellus*, *Gamasellus*, *Heterogamasus* Trägårdh, 1908, *Heydeniella* Richters, 1907, *Hydrogamasellus* Hirschmann, 1966, *Laelogamasus* Berlese, 1905, *Neogamasellekans*, *Notogamasellus*, *Ologamasus*, *Parasitiphis*, *Periseius* Womersley, 1961, *Rhodacaroides*, and the new genera *Acugamasus* Lee, 1970, *Cymiphis* Lee, 1970, *Geogamasus* Lee, 1970, *Hiniphis* Lee, 1970, *Litogamasus* Lee, 1970, *Pilellus* Lee, 1970, *Pyriphis* Lee, 1970, and *Rykellus* Lee, 1970; Rhodacarinae, containing *Afrogamasellus*, *Rhodacarellus*, *Rhodacaropsis* and *Rhodacarus*; Sessiluncinae, containing *Antennolaelaps*, *Gamasellekans*, *Gamasellopsis*, *Gamasitus*, *Onchogamasus*, *Paragamasellekans*, *Queenslandolaelaps*, *Sessiluncus* and *Stylochirus* Canestrini & Canestrini, 1882; and Tangaroellinae, containing *Tangaroellus* Luxton, 1968.

In the 1970's, the following new genera of Rhodacaridae were described:

Athiasella Lee, 1973a, *Solugamasus* Lee, 1973a, *Afrodacarellus* Hurlbutt, 1974, *Mediorhodacarus* Shcherbak, 1976 and *Orientolaelaps* Bregetova & Shcherbak, 1977.

Krantz (1978) characterised the Rhodacaridae as having a 3-tined palpal claw; podonotal shield not fused to opisthonotal shield; adults usually with distinctive scleronoduli between setae *j5* and *j6*; anterior portion of sternal shield weakly defined, usually carrying seta *st1*; ten setae each on genu and tibia IV; adult male with spermatodactyl often recurved basally and with seta *st5* on sternogenital shield (cited as sterno-metasterno-genital shield). This concept of Rhodacaridae, corresponded to the strict sense of Johnston (1968) and to the Rhodacarinae of Lee (1970). Actually, Johnston (1968) did not discuss the characteristics and the constitution of the group, but just provided a re-drawn illustration of details of the female and the male of *R. roseus*, the type species of

Rhodacarus. Krantz (1978) also characterised the Rhodacaroidea for the first time, including in this superfamily the families Rhodacaridae, Digamasellidae and Ologamasidae Ryke. The superfamily was considered to consist of mites with undivided sternal shield that generally bears four pairs of setae, and the genital shield usually rounded anteriorly and not fused with the ventrianal shield. It was considered that in some Rhodacaroidea seta *st4* could be inserted in the unsclerotised integument and seta *st1* could be inserted on a weakly defined anteromarginal extension of the sternal shield.

Shcherbak (1980) characterised the Rhodacaridae as a family whose adults and deutonymphs had the dorsal idiosoma covered by two shields of subequal sizes; podonotal shield with three or four scleronoduli, which in deutonymphs were sometimes difficult to discern; female with undivided sternal shield (referred to as fused sternal and metasternal shields) bearing four pairs of setae; females and males with seven pairs of setae on the venter of the opisthosoma in addition to the three circumanal setae; epistome usually with three processes of equal or different lengths; males with spermatodactyl S-shaped, basally fused to movable cheliceral digit and apically free and with femur II bearing a spine-like seta. Apparently referring to both sexes, she mentioned that Rhodacaridae have the hypostomal setae simple in all developmental stages, and a deutosternal groove with six to eight transverse rows of denticles. She divided Rhodacaridae into three subfamilies: Rhodacarinae, containing *Mediorhodacarus*, *Rhodacaropsis* and *Rhodacarus*; Rhodacarellinae, containing *Rhodacarellus* and the new genus *Minirhodacarellus* Shcherbak, 1980; and Dendrolaelapinae, containing *Dendrolaelaps*, *Dendrolaelaspis* Lindquist, 1975, *Dendroseius* Karg, 1965, *Longoseius*, *Multidendrolaelaps* Hirschmann,

1974, *Orientolaelaps*, and two new genera, *Oligodentatus* Shcherbak, 1980 and *Insectolaelaps* Shcherbak, 1980.

Shcherbak (1980) also described *Multidentorhodacarus* as a subgenus of *Rhodacarus*, and this subgenus was raised to genus level by Karg (2000b). However, Shcherbak (1980) did not designate a type species for *Multidentorhodacarus*, so the name is not available from that date (*International Code of Zoological Nomenclature*, Article 13.3). Karg (2000b) was the first to both publish a diagnosis of this genus and specify its type species, so the authorship of this name becomes *Multidentorhodacarus* Karg, 2000b. Shcherbak (1983) also described the new genus *Dendrolobatus* Shcherbak, 1983 in Rhodacaridae.

Evans & Purvis (1987) described the genus *Protogamasellopsis* Evans & Purvis, 1987 in the family Ascidae. This genus was transferred to Rhodacaridae by Karg (1994a). Further valuable discussions about this genus were presented by Karg (1994b) and Halliday *et al.* (1998), and it is here considered to belong to the Rhodacaridae. Six other new genera have been described since then: *Pararhodacarus* Jordaan, Loots & Theron, 1988; *Pachymasiphis* Karg, 1996, *Interrhodeus* Karg, 2000, *Pennarhodeus* Karg, 2000, *Poropodalius* Karg, 2000 and *Binodacarus* Castilho & Moraes, 2010.

Lindquist *et al.* (2009) provided a revised classification of the Mesostigmata, with an expanded concept of the Rhodacaroidea that included the Digamasellidae, Halolaelapidae, Laelaptonyssidae Womersley, Ologamasidae, Rhodacaridae and Teranyssidae Halliday. Dowling & OConnor (2010) proposed an alternative hypothesis in which the Rhodacaroidea as understood here is paraphyletic. However, until formal taxonomic changes are made, we have used the classification of Lindquist *et al.* (2009).

The purpose of this work is to review the literature concerning the taxonomy of Rhodacaridae, to present a new characterisation of the family and its member genera, to construct keys for identification of genera, and to compile a list of the species considered to belong to the Rhodacaridae, with relevant taxonomic information about each. We also attempt a summary of the genus-level classification of the Rhodacaroidea, to establish the family placement for every genus in the superfamily.

Materials and Methods

This publication includes papers published up to June 2011. The search for information was initiated by considering the literature available in the personal reprint collections of each of the authors. New references were detected by a search of electronic databases and by the evaluation of references listed in each paper available to the authors. Of fundamental importance in the initial part of the work were the publication of Lee (1970) and the Rhodacaridae database of Hallan (2005); the latter was consulted periodically between March 2006 and June 2011.

After obtaining copies of all the literature cited in this publication, we constructed a spreadsheet cross referencing each of the species considered to belong to Rhodacaridae, with characteristics mentioned in the respective descriptions or redescriptions. We examined the available types of *Interrhodeus*, *Multidentorhodacarus*, *Pennarhodeus*, *Poropodalius* and *Protogamasellopsis* to complement the information available in the literature. The types of *Protogamasellopsis dioscorus* (Manson) and *Protogamasellopsis posnaniensis* Wiśniewski & Hirschmann were not examined given their sufficiently

detailed descriptions for the purpose of this work. Despite our efforts, we were unable to examine the types of *Multidentorhodacarus denticulatus* (Berlese), *Multidentorhodacarus ruwenzoriensis* (Loots), *Multidentorhodacarus sogdianus* (Shcherbak) and *Multidentorhodacarus thysi* (Jordaan, Loots & Theron). Missing information was added as much as possible to build a standard set of characters that was used to characterise the whole family and its member genera. This analysis made it necessary to move some species from one genus to another. The final spreadsheet was then used to prepare a dichotomous key to the genera.

During our study of the Rhodacaridae, we also collected information about the supraspecific taxa of other families of Rhodacaroidea. Thus, in this document we first present diagnostic characteristics of each family of the superfamily and a checklist of the genera and subgenera of the respective families. We then present a thorough diagnosis of the Rhodacaridae and of each genus within this family, and a key to families of Rhodacaroidea and genera of Rhodacaridae. The catalogue proper then includes a list of species of Rhodacaridae, presented in alphabetical order of genera and of species within each genus. We have not used intermediate categories such as subfamily, subgenus, or species groups, because some species are not described in enough detail to allow these decisions to be done. For each genus, the following information is provided:

- Name and author;
- Original designation of the genus (even if described at subgeneric level), author, year of the original description, page on which the description begins, family in

which the genus was initially placed, type species, and further references to descriptions or re-descriptions of the genus;

- Synonyms, each followed by its author, page on which the corresponding original description started, family in which the genus was initially placed, type species, reference to the paper in which each corresponding synonymy was established, type species, and further references providing descriptive information about the junior synonym.

For each species, the following information is provided:

- Current generic combination of the species, with its author and date of description;
- Name of the species in its original combination, with reference to the author, date, and the page on which the description started;
- References to subsequent literature on the species, including different combinations or variations of the name, and including publications that provide information on the morphology of the species, other than the original description;
- Synonyms, each followed by its author, date, and page number, and the reference in which the synonymy was established;
- Type depository, the institution where the name-bearing type specimens are deposited. The types of most species described by Hurlbutt (1974) were located in the US National Museum, Beltsville, Maryland, but some have not been found;

- Type locality (first mentioning the country – to be more geographically informative, Saint Helena and Galapagos Islands were mentioned as such, without referring to the country to which they belong – followed by the location within the country, from the more specific to the more general geographic information); and habitat in which the type specimens were collected. In some cases we have added complementary locality information, in square brackets.
- Occasionally a note is added after the details of a genus or species, to explain an unusual or complicated taxonomic or nomenclatural problem.

The terminology used here for anatomical structures is that of Evans & Till (1979). Lee (1970), Shcherbak (1982) and Hirschmann & Wiśniewski (1983) used different systems of notation for the dorsal idiosomal chaetotaxy of Rhodacaroidea, but we have used the widely accepted system developed by Lindquist & Evans (1965) and Lindquist (1994).

World genera and subgenera of Rhodacaroidea

The Rhodacaridae and related families have had a very complex taxonomic history. In order to provide a satisfactory summary of the genera of Rhodacaridae, it was necessary to account for the placement of genera in all related families. We therefore present here a list of the genera and subgenera of Rhodacaroidea. We have tried to account for every genus-group name that has been applied to taxa in the superfamily. The classification used here was compiled from information in Lee (1970), Shcherbak (1980), Antony (1986), Silva

(2007), Halliday (2008a, 2008b), Lindquist *et al.* (2009) and other sources as cited. Karg (1977) divided *Afrogamasellus* into five subgenera. These are included in the checklist, but they are not used in the list of species, because it is not possible to unambiguously assign every species in the genus to one of the subgenera. Antony (1986) introduced the new genus name *Mediodacarellus*, but that name is here considered to be unavailable for nomenclatural purposes.

Many of the genera listed here in other families have been placed in the Rhodacaridae by previous authors, but are here excluded for various reasons. The genera that are here placed in the Ologamasidae have a 3-tined palp tarsal claw, seta *st4* on sternal shield, and genu and tibia IV with 9-10 setae each, but they are distinguished from Rhodacaridae by lacking scleronoduli (present in some *Gamasellus* and some *Rhodacaroides*) and desclerotised punctate bands on the dorsal and ventral shields. As in the Rhodacaridae, genera here placed in the Digamasellidae also have separate podonotal and opisthonotal shields (notal shield entire in *Lindquistoseius* Genis, Loots & Ryke, 1969 and *Panteniphis* Willmann, 1949), seta *st4* on sternal shield, and scleronoduli usually present (absent in *Digamasellus*, *Lindquistoseius*, *Panteniphis* and *Pontiolaelaps* Luxton, 1984), but they have 2-tined palp tarsal claw, lack desclerotised punctate bands on the dorsal and ventral shields, and each of their genu and tibia IV has only 6-8 setae. The genera that are here placed in the Halolaelapidae have a 3-tined palp tarsal claw, separate podonotal and opisthonotal shields, and genu IV with 9-10 setae, but they have seta *st4* on metasternal shield or on the soft integument posterior to sternal shield, lack scleronoduli and desclerotised punctate bands on the dorsal and ventral shields, and their tibia IV has 8-10 setae. *Laelaptonyssus* (and its senior synonym *Starkovia* Lombardini, 1947) is

considered to belong to Laelaptonyssidae, as mentioned by Womersley (1956b) when he described the genus. Despite having a 3-tined palp tarsal claw and seta *st4* on sternal shield, species in this genus do not have completely separated podonotal and opisthonotal shields, lack scleronoduli and desclerotised and punctate bands on the dorsal and ventral shields, and each of their genu and tibia IV has 7-10 setae. *Teranyssus* Halliday, 2006 is considered to belong to Teranyssidae, as mentioned by Halliday (2006) when he described the genus. Despite having seta *st4* on sternal shield, species in this genus have a 2-tined palp tarsal claw, entire dorsal shield, lack scleronoduli and desclerotised punctate bands on the dorsal and ventral shields, and their genu and tibia IV have 11 and 10 setae, respectively.

Antennoseius, *Asca*, *Protogamasellus* [including *Protogamasellus* (*Protogamasellodes*) Evans & Purvis, 1987], *Pachyseius* and *Trachygamasus* are excluded from the Rhodacaroidea, either because they have 2-tined palp tarsal claw, lack scleronoduli (present in some *Protogamasellus*) and desclerotised punctate bands on dorsal and ventral shields, do not have completely separate podonotal and opisthonotal shields, and mainly because have seta *st4* on metasternal shield or on the soft integument posterior to sternal shield.

Tangaroellus was provisionally placed in the Rhodacaridae by Luxton (1968), Lee (1970) and Lindquist *et al.* (2009). However, it is here considered *incertae sedis*, following Halliday *et al.* (1998). Despite having separate podonotal and opisthonotal shields, and genu and tibia IV each with ten setae, the single species in this genus has a 2-tined palp tarsal claw, lacks scleronoduli and desclerotised punctate bands on the dorsal and ventral shields, has a fully sclerotised sternal shield with only three pairs of setae, and seta *st4* on

soft integument posterior to sternal shield. It therefore does not fit the concept of Rhodacaridae as understood here.

Instability in the concept of the family Rhodacaridae means that some species that were originally placed in this family are now placed elsewhere. Examples are *Rhodacaropsis angustiventris* Athias-Henriot 1961, *Rhodacaropsis cognatus* Athias-Henriot 1961, *Rhodacaropsis massula* Athias-Henriot 1961 [transferred to *Protogamasellus* (Ascidae) by Lindquist & Evans (1965)], and *Rhodacarus costai* Sheals 1962 [transferred to *Rhodacaroides* (Ologamasidae) by Lee (1970)].

In the families Digamasellidae and Ologamasidae, our arrangement of taxa does not imply any taxonomic statements about their validity or lack of it, and is not the result of taxonomic research on our part. We list these names only as they appear in the literature, as a point of reference for future taxonomic revisions.

Rhodacaroidea Oudemans, 1902

Digamasellidae Evans, 1957

Dendrolaelaps Halbert, 1915

Dendrolaelaps (*Apophyseodendrolaelaps*) Hirschmann & Wiśniewski, 1982

Dendrolaelaps (*Cornodendrolaelaps*) Hirschmann & Wiśniewski, 1982

Dendrolaelaps (*Daeleidendrolaelaps*) Wiśniewski & Hirschmann, 1990

Dendrolaelaps (*Dendrolaelaps*) Halbert, 1915

Dendrolaelaps (*Disetodendrolaelaps*) Hirschmann & Wiśniewski, 1982

- Dendrolaelaps (Duplodendrolaelaps)* Wiśniewski & Hirschmann, 1991b
- Dendrolaelaps (Epistodendrolaelaps)* Hirschmann & Wiśniewski, 1982
- Dendrolaelaps (Foveodendrolaelaps)* Hirschmann & Wiśniewski, 1982
- Dendrolaelaps (Ipidodendrolaelaps)* Hirschmann & Wiśniewski, 1982
- Dendrolaelaps (Majestidendrolaelaps)* Wiśniewski & Hirschmann, 1989a
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- Dendrolaelaps (Stanidendrolaelaps)* Wiśniewski & Hirschmann, 1993a
- Dendrolaelaps (Xylodendrolaelaps)* Wiśniewski & Hirschmann, 1993b
- Dendrolaelaspis* Lindquist, 1975
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- Lindquistoseius* Genis, Loots & Ryke, 1969
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- Longoseius (Longoseiulus)* Lindquist, 1975
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- Oligodentatus* Shcherbak, 1980

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Halolaelapidae Karg, 1965

Halodarcia Karg, 1969

Halolaelaps Berlese & Trouessart, 1889

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= *Saprolaelaps* Leitner, 1946

= *Saprogamasellus* Willmann, 1957

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Leitneria Evans, 1957

Leitneria (*Leitneria*) Evans, 1957

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Laelaptonyssidae Womersley, 1956b

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= *Puchihlungia* Samšičák, 1964

Ologamasidae Ryke, 1962

Acugamasus Lee, 1970

Acuphis Karg, 1998

Allogamasellus Athias-Henriot, 1961

Antennolaelaps Womersley, 1956a

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Athiasella Lee, 1973a

Caliphis Lee, 1970

Cymiphis Lee, 1970

Cyrtolaelaps Berlese, 1887

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Desectophis Karg, 2003a

Euepicrius Womersley, 1942

Euryparasitus Oudemans, 1902

= *Eurylaelaps* Oudemans, 1902 (*lapsus*)

Evanssellus Ryke, 1961a

Gamasellevans Loots & Ryke, 1967a

Gamaselliphis Ryke, 1961b

Gamasellopsis Loots & Ryke, 1966

Gamasellus Berlese, 1892a

Gamasiphis Berlese, 1904

= *Micriphis* Berlese, 1914

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Gamasiphoides Womersley, 1956b

Gamasitus Womersley, 1956b

Geogamasus Lee, 1970

Heterogamasus Trägårdh, 1908

Heydeniella Richters, 1907

Hiniphis Lee, 1970

Hydrogamasellus Hirschmann, 1966

Hydrogamasus Berlese, 1892b

Laelaptiella Womersley, 1956b

Laelogamasus Berlese, 1905b

Litogamasus Lee, 1970

Neogamaselleans Loots & Ryke, 1967b

Notogamasellus Loots & Ryke, 1965

Ologamasus Berlese, 1888

= *Hologamasus* Berlese, 1892a (incorrect subsequent spelling)

= *Ologamasellus* Berlese, 1914

Onchogamasus Womersley, 1956a

Oriflammella Halliday, 2008a

Pachymasiphis Karg, 1996

Parasitiphis Womersley, 1956b

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- Periseius* Womersley, 1961
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- Pilellus* Lee, 1970
- Podonotogamasellus* Loots & Ryke, 1965
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- Queenslandolaelaps* Womersley, 1956a
- Rhodacaroides* Willmann, 1959
- Rhodacaroides (Rhodacaroides)* Willmann, 1959
- Rhodacaroides (Nodacaroides)* Karg, 1977
- Rhodacaroides (Tenacaroides)* Karg, 1977
- Rykellus* Lee, 1970
- Sessiluncus* Canestrini, 1898
- Solugamasus* Lee, 1973a
- Stylochirus* G & R Canestrini, 1882 (justified emendation following Berlese, 1882)
- = *Stilochirus* G & R Canestrini, 1882
- = *Iphidosoma* Berlese, 1892c
- = *Physallolaelaps* Berlese, 1908
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Rhodacaridae Oudemans, 1902

Afrodacarellus Hurlbutt, 1974

Afrogamasellus (*Foliogamasellus*) Karg, 1977

Afrogamasellus (*Latogamasellus*) Karg, 1977

Afrogamasellus Loots & Ryke, 1968

Afrogamasellus (*Afrogamasellus*) Loots & Ryke, 1968

= *Afrogamasellus* (*Jugulogamasellus*) Karg, 1977

Afrogamasellus (*Podalogamasellus*) Karg, 1977

Binodacarus Castilho & Moraes, 2010

Interrhodeus Karg, 2000

Mediorhodacarus Shcherbak, 1976

Minirhodacarellus Shcherbak, 1980

Multidentorhodacarus Karg, 2000

Paragamasellevans Loots & Ryke, 1968

= *Paragamasellus* Loots & Ryke, 1968 (*lapsus*)

Pararhodacarus Jordaan Loots & Theron, 1988

Pennarhodeus Karg, 2000

Poropodalius Karg, 2000

Protogamasellopsis Evans & Purvis, 1987

= *Rhodacarella* Moraza, 2004

Rhodacarellus Willmann, 1935

Rhodacaropsis Willmann, 1935

Rhodacarus Oudemans, 1902

Teranyssidae Halliday, 2006

Teranyssus Halliday, 2006

Unplaced

Tangaroellus Luxton, 1968

Characterisation of the family Rhodacaridae

Adult females

Movable digit of chelicera with 2-6 teeth, fixed digit with 3-15 teeth. Palp tarsal claw 3-tined. Epistome with anterior section either triangular; or with an anteroventral extension that may be of about uniform width along its length, narrower or wider at the base, often flanked by one or more pairs of anterolateral extensions, these extensions longer, as long as, or shorter than anteroventral extension; margin serrate or smooth. Hypostome with seta *h*₂ about in transverse line with *h*₃, or both arranged roughly in longitudinal line with seta *h*₁ (no reference is made to this characteristic in most descriptions of rhodacarid species, making it impossible to refer to it in the characterisation of each genus).

Idiosoma elongate or oval. Podonotal shield not fused to opisthonotal shield, except in *Afrogamasellus luberoensis* Loots, in which a groove is present at the line of fusion. Podonotal shield smooth or ornamented; with or without punctate band along posterior margin; with or without a transverse or V-shaped line between setae *j4* and *j5*; with 14-23 pairs of setae; 0-4 scleronoduli present between setae *j5* and *j6* (in *Poropodalius basisetae* Karg, between setae *j6* and *z6*). Opisthonotal shield smooth or ornamented, with or without punctate band along anterior margin and with 14-20 pairs of setae.

Dorsal idiosoma with 0-8 pairs of setae on soft integument along lateral margins of podonotal shield, and 0-5 pairs of setae on soft integument along lateral margins of opisthonotal shield (*Protogamasellopsis* has 6-10 pairs of setae on soft integument along lateral margins of opisthonotal shield).

Ventral idiosoma with 0-4 pairs of presternal shields, some of which may be partially subdivided. Sternal shield (also referred by other authors as sterno-metasternal shield) longer than wide or as long as wide, with 3-4 pairs of setae; anterior margin distinct or not; when indistinct, the region of the sternal shield anterior to the first pair of lyrifissures (*iv1*) is lightly sclerotised and punctate; posterior margin straight, concave, convex or with spine-like central projection; seta *st1* on presternal shield or on either lightly sclerotised or well sclerotised regions of sternal shield; seta *st4* always inserted on sternal shield. Genital shield extending posteriorly beyond hind margin of coxa IV; longer, as long as or shorter than length of its posterior margin; the latter straight, concave or convex; with a pair of lateral setae. Opisthogastric integument with or without lightly sclerotised plates between genital and ventrianal shields. Ventral and anal shields fused to form a ventrianal shield. Ventrianal shield longer than wide, as long as wide or wider than long, smooth or

ornamented, with 1-8 pairs of preanal setae in addition to paranal and postanal setae; anterior margin straight, concave or convex. With 0-6 pairs of setae on soft integument around ventrianal shield. With 0-3 pairs of rounded, elongate or triangular metapodal plates. Peritreme extending anteriorly to mid-level of coxa II, except in *Rhodacarellus liuzhiyingi* Ma and *Rhodacarellus yalujiangensis* Ma, in which the peritreme extends anteriorly to mid-level of coxa I. Peritrematal shield distinct or not; anteriorly fused or not fused to podonotal shield.

Leg I with or without pretarsus; legs II-IV with pretarsi similar to each other; seta *pl4* of tarsus IV present or absent. Genu IV with ten setae (2-2/1,3/1-1) and tibia IV with ten setae (2-1/1,3/1-2).

Adult males. Spermatodactyl often recurved basally. Seta *st5* inserted on sternogenital shield.

Characterisation of world genera of Rhodacaridae

***Afrodacarellus* Hurlbutt**

Movable and fixed cheliceral digits with 2-5 and 4-6 teeth, respectively. Arthrodistal process of chelicera shaped like a long cylindrical brush. Epistome with an anterocentral extension that may be of about uniform width along its length, narrower or wider at the base; usually flanked by one or more pairs of anterolateral extensions longer, as long as or shorter than the anterocentral extension [with anterior region triangular in *A. euungulae* (Karg)].

Idiosoma elongate or oval. Podonotal shield smooth or ornamented, with or without

punctate band along posterior margin, with 21-23 pairs of setae, two pairs of which along anterior margin, without transverse line between setae *j4* and *j5* and with four scleronoduli between setae *j5* and *j6*. Soft integument along lateral margins of podonotal shield with 0-2 pairs of setae. Opisthonotal shield smooth or ornamented, with or without punctate band along anterior margin and with 18-20 pairs of setae. Soft integument along lateral margins of opisthonotal shield with 0-1 pair of setae. Peritreme extending anteriorly to level between anterior margin of coxa III and median region of coxa II. Peritrematal shield anteriorly fused or not fused to podonotal shield. Presternal shields absent. Sternal shield longer than wide, with anterior margin indistinct and posterior margin straight, concave or with central spine-like projection. Genital shield longer than length of its posterior margin; the latter straight. Opisthogastric integument without plates between genital and ventrianal shields. Ventrianal shield longer than wide, smooth or ornamented, with 5-7 pairs of preanal setae; anterior margin straight, slightly concave or slightly convex., Soft integument around ventrianal shield with 0-2 pairs of setae. With 1-2 pairs of rounded or elongate metapodal plates; when with two pairs, these separated or partially fused. Pretarsus I present. Seta *pl4* of tarsus IV absent (present in *A. camaxiloensis*).

***Afrogamasellus* Loots & Ryke**

Movable and fixed cheliceral digits with 3-4 and 5-6 teeth, respectively. Arthrodistal process of chelicera shaped like a long cylindrical brush. Epistome with anterior region triangular; or with an anterocentral extension wider at the base, not flanked by anterolateral extensions [with an anterocentral extension narrower at the base, flanked by a pair of anterolateral extensions in *A. congoensis* (Ryke & Loots) and *A. uviraensis* (Ryke & Loots)]. Idiosoma

elongate or oval. Podonotal shield smooth or ornamented, with or without punctate band along posterior margin, with 18-23 pairs of setae, two pairs of which along anterior margin, without transverse line between setae *j*₄ and *j*₅ and with four scleronoduli between setae *j*₅ and *j*₆ (absent in *A. luberoensis kalibuensis* Loots). Soft integument along lateral margins of podonotal shield with 0-1 pair of setae. Opisthonotal shield smooth or ornamented, with or without punctate band along anterior margin and with 17-20 pairs of setae. Soft integument along lateral margins of opisthonotal shield with 0-3 pairs of setae. Peritreme extending anteriorly to level between anterior margin of coxa III and median region of coxa II. Peritrematal shield anteriorly fused or not fused to podonotal shield. With 0-1 pair of presternal shields. Sternal shield longer than wide, with anterior margin distinct and posterior margin straight, concave or with central spine-like projection. Genital shield as long as or shorter than length of its posterior margin; the latter straight. Opisthogastric integument without plates between genital and ventrianal shields. Ventrianal shield longer than wide, smooth or ornamented, with 5-7 pairs of preanal setae; anterior margin straight or concave. Soft integument around ventrianal shield with 0-2 pairs of setae. With 1-2 pairs of rounded, elongate or triangular metapodal plates; when with two pairs, these separated or partially fused. Pretarsus I present. Seta *pl*₄ of tarsus IV absent.

***Binodacarus* Castilho & Moraes**

Movable and fixed cheliceral digits with three and four teeth, respectively. Arthrodistal process of chelicera in the form of a short coronet-like fringe. Epistome with anterior region triangular. Idiosoma elongate. Podonotal shield smooth, with punctate band along posterior margin, with 14 pairs of setae, two pairs of which along anterior margin, without

transverse line between setae *j4* and *j5* and with two scleronoduli between setae *j5* and *j6*.

Soft integument along lateral margins of podonotal shield with eight pairs of setae.

Opisthonotal shield smooth, with punctate band along anterior margin and with 14 pairs of setae. Soft integument along lateral margins of opisthonotal shield with five pairs of setae.

Peritreme greatly reduced, not reaching anterior margin of coxa IV. Peritrematal shield indistinct. Presternal shields absent. Sternal shield longer than wide, with anterior margin indistinct and posterior margin concave. Genital shield longer than length of its posterior margin; the latter straight. Opisthogastric integument with two lightly sclerotised plates between genital and ventrianal shields. Ventrianal shield longer than wide, mostly smooth, except for a punctate anteromedian lobe and for few diagonal lateral striae; with five pairs of preanal setae. Soft integument around ventrianal shield with two pairs of setae. With a pair of metapodal plates subdivided into a small anterior fragment and a larger posterior fragment. Pretarsus I present. Seta *pl4* of tarsus IV absent.

***Interrhodeus* Karg**

Movable and fixed cheliceral digits with four and five teeth, respectively. Arthrodistal process of chelicera in the form of a short coronet-like fringe. Epistome with a serrate anterocentral extension about uniform width along its length, flanked by a pair of serrate anterolateral extensions slightly longer than the anterocentral extension. Idiosoma elongate. Podonotal shield ornamented, with punctate band along posterior margin, with 22 pairs of setae, two pairs of which along anterior margin, without transverse line between setae *j4* and *j5* and without distinct scleronoduli. Soft integument along lateral margins of podonotal shield without setae. Opisthonotal shield ornamented, with punctate band along anterior

margin and with 20 pairs of setae. Soft integument along lateral margins of opisthonotal shield without setae. Peritreme extending anteriorly to median level of coxa II. Peritrematal shield not fused to podonotal shield. Presternal shields absent. Sternal shield longer than wide, with anterior margin indistinct and posterior margin straight. Genital shield longer than length of its posterior margin; the latter straight. Opisthogastric integument without plates between genital and ventrianal shields. Ventrianal shield longer than wide, ornamented, with five pairs of preanal setae; anterior margin straight. Soft integument around ventrianal shield with two pairs of setae. With a pair of elongate metapodal plates. Pretarsus I present. Seta *p/4* of tarsus IV absent.

Mediorhodacarus Shcherbak

Movable and fixed cheliceral digits with four and nine teeth, respectively. Form of arthrodistal process of chelicera unknown. Epistome with an anterocentral extension wider at the base, totally smooth or with distal half slightly serrate, and flanked by a pair of smooth or slightly serrate anterolateral extensions shorter than the anterocentral extension.

Idiosoma elongate. Podonotal shield smooth, with punctate band along posterior margin, with 23 pairs of setae, four pairs of which along anterior margin, with transverse line between setae *j4* and *j5* and with four scleronoduli between setae *j5* and *j6*. Soft integument along lateral margins of podonotal shield without setae. Opisthonotal shield smooth, without punctate band along anterior margin and with 16 pairs of setae. Soft integument along lateral margins of opisthonotal shield with three pairs of setae. Peritreme extending anteriorly to level of anterior margin of coxa III. Peritrematal shield indistinct. With two pairs of presternal shields. Sternal shield longer than wide, with anterior margin indistinct

and posterior margin convex. Genital shield longer than length of its posterior margin; the latter convex. Opisthogastric integument without plates between genital and ventrianal shields. Ventrianal shield longer than wide, ornamented, with five pairs of preanal setae; anterior margin slightly convex. Soft integument around ventrianal shield with two pairs of setae. With a pair of elongate metapodal plates. Pretarsus I absent. Seta *pl4* of tarsus IV absent.

***Minirhodacarellus* Shcherbak**

Movable and fixed cheliceral digits with three and 4-5 teeth, respectively. Arthrodistal process of chelicera in the form of a short coronet-like fringe. Epistome with a smooth anteroventral extension about uniform width along its length, flanked by a pair of serrate anterolateral extensions shorter than the anteroventral extension. Idiosoma elongate. Podonotal shield smooth, with punctate band along posterior margin, with 22 pairs of setae, three pairs of which along anterior margin, with transverse line between setae *j4* and *j5* and with four scleronoduli between setae *j5* and *j6*. Soft integument along lateral margins of podonotal shield with a pair of setae. Opisthonotal shield smooth, without punctate band along anterior margin and with 15 pairs of setae. Soft integument along lateral margins of opisthonotal shield with four pairs of setae. Peritreme extending anteriorly to level of posterior margin of coxa II. Peritrematal shield indistinct. Presternal shields absent. Sternal shield longer than wide, with anterior margin indistinct and posterior margin convex. Genital shield longer than length of its posterior margin; the latter convex. Opisthogastric integument without plates between genital and ventrianal shields. Ventrianal shield longer than wide, smooth, with five pairs of preanal setae; anterior margin slightly concave. Soft

integument around ventrianal shield with two pairs of setae. Without metapodal plates.

Pretarsus I present. Seta *p/4* of tarsus IV absent.

***Multidentorhodacarus* Karg**

Movable and fixed cheliceral digits with 4-6 and 9-15 teeth, respectively. Arthrodistal process of chelicera in the form of a short coronet-like fringe. Epistome with an anterocentral extension slightly wider at the base, smooth or with the distal half slightly serrate, and flanked by at least a pair of smooth or serrate anterolateral extensions shorter than the anterocentral extension. Idiosoma elongate or slightly oval. Podonotal shield smooth, with or without punctate band along posterior margin, with 21-23 pairs of setae, four pairs of which along anterior margin, with V-shaped line posterior of setae *j4*, *z3* and *s2* and with three scleronoduli between setae *j5* and *j6*. Soft integument along lateral margins of podonotal shield with 0-1 pair of setae. Opisthonotal shield smooth, with or without punctate band along anterior margin and with 16-19 pairs of setae. Soft integument along lateral margins of opisthonotal shield with 1-3 pairs of setae. Peritreme extending anteriorly to level between median region of coxa III and posterior margin of coxa II. Peritrematal shield not fused to podonotal shield. Presternal shields absent. Sternal shield longer than wide, with anterior margin indistinct and posterior margin straight or with spine-like central projection. Genital shield longer than length of its posterior margin; the latter straight or convex. Opisthogastric integument without plates between genital and ventrianal shield. Ventrianal shield longer than wide, smooth, with 4-5 pairs of preanal setae; anterior margin slightly convex, concave or straight. Soft integument around

ventrianal shield with 2-3 pairs of setae. With or without a pair of elongate metapodal plates. Pretarsus I absent. Seta *p/l4* of tarsus IV absent.

***Paragamasellevans* Loots & Ryke**

Movable and fixed cheliceral digits with three and five teeth, respectively. Arthrodistal process of chelicera in the form of a short coronet-like fringe. Epistome with an anterocentral extension wider at the base; with one to several pairs of spines along its median region; not flanked by anterolateral extensions. Idiosoma elongate. Podonotal shield ornamented, with punctate band along posterior margin, with 21-22 pairs of setae, three pairs of which along anterior margin, without transverse line between setae *j4* and *j5* and with four scleronoduli between setae *j5* and *j6*. Soft integument along lateral margins of podonotal shield without setae. Opisthonotal shield ornamented, with punctate band along anterior margin and with 15-20 pairs of setae. Soft integument along lateral margins of opisthonotal shield with 0-3 pairs of setae. Peritreme extending anteriorly to level of posterior margin of coxa II. Peritrematal shield anteriorly fused or not fused to podonotal shield. With a pair of presternal shields. Sternal shield longer than wide, with anterior margin distinct and posterior margin concave. Genital shield longer than length of its posterior margin; the latter straight. Opisthogastric integument without plates between genital and ventrianal shields. Ventrianal shield longer than wide, ornamented, with six pairs of preanal setae; anterior margin slightly concave., Soft integument around ventrianal shield with a pair of setae. With or without a pair of elongate metapodal plates. Pretarsus I present. Seta *p/l4* of tarsus IV present.

***Pararhodacarus* Jordaan, Loots & Theron**

Movable and fixed cheliceral digits with three and five teeth, respectively. Arthrodistal process of chelicera shaped like a long cylindrical brush. Epistome with anterior region triangular. Idiosoma elongate. Podonotal shield ornamented, without punctate band along posterior margin, with 21 pairs of setae, three pairs of which along anterior margin, without transverse line between setae *j4* and *j5* and with four scleronoduli between setae *j5* and *j6*. Soft integument along lateral margins of podonotal shield without setae. Opisthonotal shield ornamented, without punctate band along anterior margin and with 15 pairs of setae. Soft integument along lateral margins of opisthonotal shield with four pairs of setae. Peritreme extending anteriorly to median level of coxa III. Peritrematal shield not fused to podonotal shield. With a pair of presternal shields. Sternal shield longer than wide, with anterior margin indistinct and posterior margin straight. Genital shield longer than length of its posterior margin; the latter convex. Opisthogastric integument with three lightly sclerotised plates between genital and ventrianal shields. Ventrianal shield longer than wide, ornamented, with seven pairs of preanal setae; anterior margin straight. Soft integument around ventrianal shield without setae. With two pairs of rounded and one pair of elongate metapodal plates. Pretarsus I absent. Seta *pl4* of tarsus IV present.

***Pennarhodeus* Karg**

Movable and fixed cheliceral digits with three and 3-5 teeth, respectively. Arthrodistal process of chelicera in the form of a short coronet-like fringe or 3-tined. Epistome with a smooth anterocentral extension that may be of about uniform width along its length or slightly wider at the base, and flanked by a pair of smooth or serrate anterolateral

extensions shorter than the anterocentral extension. Idiosoma elongate. Podonotal shield ornamented, with punctate band along posterior margin, with 22-23 pairs of setae, two pairs of which along anterior margin, without transverse line between setae *j4* and *j5* and without distinct scleronoduli. Soft integument along lateral margins of podonotal shield without setae. Opisthonotal shield ornamented, with punctate band along anterior margin and with 15 pairs of setae. Soft integument along lateral margins of opisthonotal shield with 4-5 pairs of setae. Peritreme extending anteriorly to level between anterior margin of coxa III and median region of coxa II. Peritrematal shield not fused to podonotal shield. Presternal shields absent. Sternal shield longer than wide, with anterior margin indistinct and posterior margin straight or slightly concave. Genital shield longer or shorter than length of its posterior margin; the latter straight. Opisthogastric integument with or without lightly sclerotised plates between genital and ventrianal shields. Ventrianal shield wider than long, ornamented, with five pairs of preanal setae; anterior margin straight or slightly convex. Soft integument around ventrianal shield with two pairs of setae. With a pair of rounded metapodal plates. Pretarsus I present. Seta *p/4* of tarsus IV absent.

***Poropodalius* Karg**

Movable and fixed cheliceral digits with three and five teeth, respectively. Arthrodial process of chelicera in the form of a short coronet-like fringe. Epistome with a smooth anterocentral extension that may be of about uniform width along its length or wider at the base, and flanked by a pair of smooth or serrate anterolateral extensions shorter than the anterocentral extension. Idiosoma elongate. Podonotal shield ornamented, with punctate band along posterior margin, with 21-22 pairs of setae, two pairs of which along anterior

margin, without transverse line between setae *j4* and *j5* and with four scleronoduli between setae *j5* and *j6* (between setae *j6* and *z6* in *P. basisetae*). Soft integument along lateral margins of podonotal shield with 1-2 pairs of setae. Opisthonotal shield ornamented, with punctate band along anterior margin and 15 pairs of setae. Soft integument along lateral margins of opisthonotal shield with 4-5 pairs of setae. Peritreme extending anteriorly to level of median region of coxa II. Peritrematal shield not fused to podonotal shield. Presternal shields absent. Sternal shield longer than wide, with anterior margin indistinct and posterior margin straight or concave. Genital shield longer or shorter than length of its posterior margin; the latter straight. Opisthogastric integument with or without lightly sclerotised plates between genital and ventrianal shields. Ventrianal shield wider than long, ornamented, with 5-6 pairs of preanal setae; anterior margin concave or straight, Soft integument around ventrianal shield with two pairs of setae. With a pair of variously shaped metapodal plates (without metapodal plates in *P. acutus* Karg). Pretarsus I present. Seta *pl4* of tarsus IV absent.

***Protogamasellopsis* Evans & Purvis**

Movable and fixed cheliceral digits with two and 6-7 teeth, respectively. Arthrodistal process of chelicera in the form of a short coronet-like fringe. Epistome with anterior region triangular. Idiosoma elongate. Podonotal shield smooth, with or without punctate band along posterior margin, with 16 pairs of setae, three pairs of which along anterior margin, without transverse line between setae *j4* and *j5* and without distinct scleronoduli. Soft integument along lateral margins of podonotal shield with six pairs of setae. Opisthonotal shield smooth, with or without punctate band along anterior margin and with 15 pairs of

setae. Soft integument along lateral margins of opisthonotal shield with 6-10 pairs of setae. Peritreme extending anteriorly to level between posterior margin of coxa II and median region of coxa II. Peritrematal shield not fused to podonotal shield. With 0-4 pairs of transverse series of presternal shields, each series consisting of 1-2 shields. Sternal shield longer than wide, with anterior margin indistinct and posterior margin concave. Genital shield longer than length of its posterior margin; the latter straight. Opisthogastric integument with or without lightly sclerotised plates between genital and ventrianal shields. Ventrianal shield longer than wide, smooth, with 1-2 pairs of preanal setae; anterior margin convex. Soft integument around ventrianal shield with 5-6 pairs of setae. With 0-3 pairs of elongate or rounded metapodal plates. Pretarsus I present. Seta *pl4* of tarsus IV present.

***Rhodacarellus* Willmann**

Movable and fixed cheliceral digits with 2-6 and 4-7 teeth, respectively. Arthrodistal process of chelicera in the form of a short coronet-like fringe. Epistome with a smooth or serrate anterocentral extension that may be of about uniform width along its length or wider at the base, and usually flanked by at least a pair of smooth or serrate anterolateral extensions longer, as long as or shorter than the anterocentral extension. Idiosoma elongate or oval. Podonotal shield smooth or ornamented, with punctate band along posterior margin, with 16-23 pairs of setae, 2-3 pairs of which along anterior margin, entire or with a lateral fissure at level of setae *z1*, *z2* and *z3*, without transverse line between setae *j4* and *j5* and with four scleronoduli between setae *j5* and *j6*. Soft integument along lateral margins of podonotal shield with 0-6 pairs of setae. Opisthonotal shield smooth or ornamented, with punctate band along anterior margin and with 15-20 pairs of setae. Soft integument along lateral

margins of opisthonotal shield with 0-5 pairs of setae. Peritreme extending anteriorly to level between anterior margin of coxa III and median region of coxa II (peritreme extending anteriorly to median region of coxa I in *R. liuzhiyingi* and *R. yalujiangensis*). Peritrematal shield anteriorly fused or not fused to podonotal shield. Presternal shields absent. Sternal shield longer than wide, with anterior margin indistinct and posterior margin concave. Genital shield longer than length of its posterior margin; the latter straight or convex. Opisthogastric integument with or without lightly sclerotised plates between genital and ventrianal shields. Ventrianal shield as long as wide, smooth or ornamented, with 3-8 pairs of preanal setae; anterior margin straight or slightly concave. Soft integument around ventrianal shield with 0-4 pairs of setae. With 1-2 pairs of elongate or rounded metapodal plates; when with two pairs, these separated or partially fused. Pretarsus I present. Seta *p/4* of tarsus IV absent.

***Rhodacaropsis* Willmann**

Movable and fixed cheliceral digits with three and 5-9 teeth, respectively. Arthrodistal process of chelicera in the form of a short coronet-like fringe. Epistome with a anterocentral extension wider at the base, totally smooth or with distal half slightly serrate, and flanked by a pair of smooth anterolateral extensions shorter than the anterocentral extension. Idiosoma elongate. Podonotal shield smooth, with or without punctate band along posterior margin, with 21-22 pairs of setae, four pairs of which along anterior margin, with transverse line between setae *j4* and *j5* and with three scleronoduli between setae *j5* and *j6*. Soft integument along lateral margins of podonotal shield with 1-2 pairs of setae. Opisthonotal shield smooth, with or without punctate band along anterior margin and with

15-19 pairs of setae. Soft integument along lateral margins of opisthonotal shield with 0-5 pairs of setae. Peritreme greatly reduced, not reaching anterior margin of coxa IV.

Peritrematal shield absent or restricted to a band along peritreme. With two pairs of presternal shields. Sternal shield longer than wide, with anterior margin distinct and posterior margin convex. Genital shield longer than length of its posterior margin; the latter convex. Opisthogastric integument without plates between genital and ventrianal shields. Ventrianal shield longer than wide, smooth, with 4-7 pairs of preanal setae; anterior margin straight or convex. Soft integument around ventrianal shield with 0-3 pairs of setae. With a pair of rounded metapodal plates. Pretarsus I present. Seta *pl4* of tarsus IV absent.

Rhodacarus Oudemans

Movable and fixed cheliceral digits with three and 5-6 teeth, respectively. Arthrodistal process of chelicera in the form of a short coronet-like fringe. Epistome with an anterocentral extension that may be of about uniform width along its length or wider at the base, totally smooth or with distal half serrate, and flanked by at least a pair of smooth or serrate anterolateral extensions shorter than the anterocentral extension (with anterior region triangular in *R. rhodacaropsis* Ryke). Idiosoma elongate. Podonotal shield smooth, with or without punctate band along posterior and lateral margins, with 18-23 pairs of setae, four pairs of which along anterior margin, with or without V-shaped line posterior of setae *j4*, *z3* and *s2* and with three scleronoduli between setae *j5* and *j6*. Soft integument along lateral margins of podonotal shield with 0-4 pairs of setae. Opisthonotal shield smooth, with or without punctate band along anterior margin and with 14-19 pairs of setae. Soft integument along lateral margins of opisthonotal shield with 0-6 pairs of setae. Peritreme

extending anteriorly to level between median region of coxa III and posterior margin of coxa II. Peritrematal shield anteriorly fused or not fused to podonotal shield. Presternal shields absent (with a pair of presternal shields in *R. berrisfordi* Loots and *R. rhodacaropsis*). Sternal shield longer than wide, with anterior margin indistinct and posterior margin straight or with a central spine-like projection. Genital shield longer than length of its posterior margin; the latter straight or convex. Opisthogastric integument with or without lightly sclerotised plates between genital and ventrianal shields. Ventrianal shield longer than wide, smooth, with 4-6 pairs of preanal setae; anterior margin straight, slightly or distinctly convex. Soft integument around ventrianal shield with 1-3 pairs of setae. With 1-2 pairs of elongate or rounded metapodal plates. Pretarsus I absent. Seta *pl4* of tarsus IV absent.

Key to world families of Rhodacaroidea and genera of Rhodacaridae (adult females)

1. Seta *st4* on metasternal shield or on soft integument..... Halolaelapidae [Fig. 1 A-B]
 - Seta *st4* on sternal shield (except for *Oriflammella* (Ologamasidae), which has *st4* on metasternal platelets, but has the dorsal shield setae strongly pilose and mounted on long stalks 2
2. With anal shield, without preanal setae..... Teranyssidae [Fig. 2 A-C]
 - With ventrianal shield, with 1-9 pairs of preanal setae 3
3. With attenuate chelicera; palp with 4 segments (fused tibia and tarsus).....
 -Laelaptonyssidae [Fig. 3 A-C]
 - With normal chelicera, not attenuate; palp with 5 segments 4

4. Palp tarsal claw 2-tined; genu and tibia IV with six or eight setae.....
Digamasellidae [Fig. 4 A-D]
- Palp tarsal claw 3-tined; genu and tibia IV with nine or ten setae..... 5
5. Usually without densely sclerotised structures between setae *j5* and *j6*
 (scleronoduli); podonotal and opisthonotal shields fused or not; without desclerotised
 bands of punctate integument..... Ologamasidae [Fig. 5 A-D]
- With scleronoduli (except in *Interrhodeus*, *Protogamasellopsis* and *Pennarrhodeus*);
 podonotal and opisthonotal shields not fused (except in *Afrogamasellus luberoensis*);
 usually with desclerotised bands of punctate integument along posterior margin of
 podonotal, anterior margin of opisthonotal, anterior margin of sternal, posterior
 margin of genital and anterior margin of ventrianal shields Rhodacaridae...6
6. Peritreme greatly reduced, not reaching anterior margin of coxa IV 7
- Peritreme extending anteriorly at least to level of median region of coxa III..... 8
7. Podonotal shield with 14 pairs of setae, without transverse line between setae *j4* and *j5*
 and with two scleronoduli..... *Binodacarus* Castilho & Moraes [Fig. 6 A-D]
- Podonotal shield with 21-22 pairs of setae, with transverse line between setae *j4* and *j5*
 and with three scleronoduli..... *Rhodacaropsis* Willmann [Fig. 7 A-D]
8. Podonotal shield with 16 pairs of setae; ventrianal shield with one or two pairs of
 preanal setae *Protogamasellopsis* Evans & Purvis [Fig. 8 A-D]
- Podonotal shield with 17 or more pairs of setae (*Rhodacarellus arcanus* with 16);
 ventrianal shield with at least four pairs of preanal setae 9
9. Scleronoduli absent; arthrodistal process of chelicera in the form of a short coronet-like
 fringe 10

- Scleronoduli present or absent absent; arthrodistal process of chelicera in the form of a short coronet-like fringe or shaped like a long cylindrical brush) (if scleronoduli absent, in *Afrogamasellus luberoensis kalibuensis*, arthrodistal process shaped like a long cylindrical brush) 11
- 10. Podonotal and opisthonotal setae serrated *Pennarhodeus* Karg [Fig. 9 A-D]
 - Podonotal and opisthonotal setae smooth *Interrhodeus* Karg [Fig. 10 A-D]
- 11. Podonotal shield with three scleronoduli; arthrodistal process of chelicera in the form of a short coronet-like fringe 12
 - Podonotal shield with four scleronoduli; arthrodistal process of chelicera in the form of a short coronet-like fringe or shaped like a long cylindrical brush 13
- 12. Fixed cheliceral digit with at least nine teeth.. *Multidentorhodacarus* Karg [Fig. 11 A-D]
 - Fixed cheliceral digit with at most six teeth *Rhodacarus* Oudemans [Fig. 12 A-D]
- 13. With two pairs of presternal shields *Mediorhodacarus* Shcherbak [Fig. 13 A-D]
 - With 0-1 pair of presternal shields 14
- 14. Arthrodistal process of chelicera shaped like a long cylindrical brush 15
 - Arthrodistal process of chelicera in the form of a short coronet-like fringe 17
- 15. With three pairs of metapodal plates; basitarsus IV with four setae (seta *pl4* present)
..... *Pararhodacarus* Jordaan, Loots & Theron [Fig. 14 A-D]
 - With 1-2 pairs of metapodal plates; basitarsus IV with three setae (seta *pl4* absent, except in *Afrodacarellus camaxiloensis*) 16
- 16. Epistome with anterior region triangular or with an anterocentral extension wider at the base, not flanked by anterolateral extensions [in *A. congoensis* (Ryke & Loots) and *A. uviraensis* (Ryke & Loots) anterior region of epistome with an anterocentral

- extension narrower at the base, flanked by a pair of anterolateral extensions]; with 0-1 pair of presternal shields; sternal shield with anterior margin distinct; genital shield as long as or shorter than length of its posterior margin.....
*Afrogamasellus* Loots & Ryke [Fig. 15 A-D]
- Epistome with an anterocentral extension that may be of about uniform width along its length, narrower or wider at the base; usually flanked by one or more pairs of anterolateral extensions [*A. euungulae* (Karg), with anterior region triangular]; without presternal shields; sternal shield with anterior margin indistinct and with region anterior to first pair of lyrifissures (*iv1*) lightly sclerotised and punctate; genital shield longer than length of its posterior margin.....
*Afrodacarellus* Hurlbutt [Fig. 16 A-D]
17. Podonotal shield with a transverse line between setae *j4* and *j5*.....
*Minirhodacarellus* Shcherbak [Fig. 17 A-D]
- Podonotal shield without transverse line between setae *j4* and *j5* 18
18. Epistome with an anterocentral extension (with one to several pairs of spines along its median region) wider at the base, not flanked by anterolateral extensions; basitarsus IV with four setae (*pl4* present)*Paragamasellevans* Loots & Ryke [Fig. 18 A-D]
- Epistome with a smooth or serrate anterocentral extension that may be of about uniform width along its length or wider at the base, usually flanked by at least a pair of smooth or serrate anterolateral extensions; basitarsus IV with three setae (*pl4* absent) 19
14. Podonotal shield ornamented; with a pair of roundish metapodal plates (indistinct or absent em *P. acutus* Karg).....*Poropodalius* Karg [Fig. 19 A-D]

- Podonotal shield smooth (ornamented in *R. unicus* Karg); with a pair of elongate metapodal plates (if second pair of metapodal plates are present, these are rounded and small*Rhodacarellus* Willmann [Fig. 20 A-D])

Catalogue of world species of Rhodacaridae

Genus *Afrodacarellus* Hurlbutt, 1974

Afrodacarellus Hurlbutt, 1974: 589 (described in Rhodacaridae Oudemans).

Type species: *Afrodacarellus femoratus* Hurlbutt, 1974, by original designation.

Afrogamasellus (Foliogamasellus) Karg, 1977: 345 (described in Rhodacaridae Oudemans). **New synonymy.**

Afrogamasellus (Foliogamasellus).— Karg, 2003b: 26.

Type species: *Afrogamasellus camaxiloensis* Loots, 1969, by original designation.

Afrogamasellus (Latogamasellus) Karg, 1977: 345 (described in Rhodacaridae Oudemans).

New synonymy.

Afrogamasellus (Foliogamasellus).— Karg, 2003b: 26; Karg & Schorlemmer, 2009: 65.

Type species: *Afrogamasellus squamosus* Karg, 1977, by original designation.

01. *Afrodacarellus bakeri* (Hurlbutt, 1974)

Afrogamasellus bakeri Hurlbutt, 1974: 586.

Mediodacarellus bakeri.— Antony, 1986: 152.

Afrodacarellus bakeri.— new combination.

TYPE DEPOSITORY: unknown.

TYPE LOCALITY AND HABITAT: Tanzania, track from Morningside to the top of
Mount Bondwa, Uluguru Mountains, [Morogoro], alt. 1450 m, 1 December 1967,
in rotting log at edge of rain forest.

NOTE: *Mediodacarellus* is not available for nomenclatural purposes, and is used here for
information only.

02. *Afrodacarellus bipilosus* (Karg, 1979)

Afrogamasellus bipilosus Karg, 1979: 207.

Afrogamasellus (Latogamasellus) bipilosus.— Karg, 1979: 207; Karg, 2003b: 27.

Latogamasellus bipilosus.— Antony, 1986: 148.

Afrodacarellus bipilosus.— new combination.

TYPE DEPOSITORY: Ungarische Naturwissenschaftliches Museum, Budapest, Hungary.

TYPE LOCALITY AND HABITAT: Argentina, Mount Piltriquitron [= Cerro
Piltriquitron], El Bolsón, Rio Negro, 19 October 1961, in leaf litter.

03. *Afrodacarellus camaxiloensis* (Loots, 1969)

Afrogamasellus camaxiloensis Loots, 1969a: 60.

Afrogamasellus camaxiloensis.— Lee, 1970: 34; Loots, 1971: 3.

Afrodacarellus camaxiloensis.— Hurlbutt, 1974: 591; Antony, 1986: 151.

Afrogamasellus (Foliogamasellus) camaxiloensis.— Karg, 1977: 345; Karg &

Schorlemmer, 2009: 66.

TYPE DEPOSITORY: Museu do Dundo, Dundo, Angola.

TYPE LOCALITY AND HABITAT: Angola, Tshihumbwe River, affluent of the Lubalo River, Camaxilo, Lunda, 6 July 1962, in forest soil.

04. *Afrodacarellus citri* (Loots, 1969)

Afrogamasellus citri Loots, 1969a: 75.

Afrogamasellus citri.— Hurlbutt, 1974: 588; Castilho & Moraes, 2010: 396.

Afrogamasellus (Foliogamasellus) citri.— Karg, 1977: 344.

Afrodacarellus citri.— new combination.

TYPE DEPOSITORY: Museu do Dundo, Dundo, Angola.

TYPE LOCALITY AND HABITAT: South Africa, Nelspruit, [Mpumalanga], 1965, in soil under *Citrus* sp. [Rutaceae].

05. *Afrodacarellus concavus* Hurlbutt, 1974

Afrodacarellus concavus Hurlbutt, 1974: 596.

TYPE DEPOSITORY: United States National Museum of Natural History Acari
Collection, Beltsville, Maryland, USA.

TYPE LOCALITY AND HABITAT: Tanzania, summit of Mount Bondwa, Uluguru
Mountains, [Morogoro], alt. 2120 m, 1 May 1968, in humus and lichens under
Philippia [Ericaceae].

06. *Afrodacarellus euungulae* (Karg, 2003)

Afrogamasellus euungulae Karg, 2003a: 245.

Afrodacarellus euungulae.— new combination.

TYPE DEPOSITORY: Arachnologische Sammlung des Museums für Naturkunde, Berlin,
Germany.

TYPE LOCALITY AND HABITAT: Ecuador, Cardy [= Carchi?], 1989, in prairie soil.

07. *Afrodacarellus femoratus* Hurlbutt, 1974

Afrodacarellus femoratus Hurlbutt, 1974: 593.

TYPE DEPOSITORY: United States National Museum of Natural History Acari
Collection, Beltsville, Maryland, USA.

TYPE LOCALITY AND HABITAT: Tanzania, in the upper part of a valley between the
Morogoro Regional Forestry Office and Mount Lupanga, Morogoro, alt. 1100 m,
30 August 1967, on leaves and twigs under clump of trees.

08. *Afrodacarellus filofissus* (Karg & Schorlemmer, 2009)

Afrogamasellus (Foliogamasellus) filofissus Karg & Schorlemmer, 2009: 65.

Afrodacarellus filofissus.— new combination.

TYPE DEPOSITORY: Arachnologische Sammlung des Museums für Naturkunde, Berlin,
Germany.

TYPE LOCALITY AND HABITAT: Venezuela, at the street from Caracas to La Guaira,
1973, in litter and soil.

09. *Afrodacarellus furculatus* (Karg, 1979)

Afrogamasellus furculatus Karg, 1979: 208.

Afrogamasellus (Latoamasellus) furculatus.— Karg, 1979: 207; Karg, 2003b: 27.

Afrodacarellus furculatus.— new combination.

TYPE DEPOSITORY: Ungarische Naturwissenschaftliches Museum, Budapest, Hungary.

TYPE LOCALITY AND HABITAT: Argentina, Mount Piltriquitron [= Cerro Piltriquitron], El Bolsón, Rio Negro, 16 May 1961, in soil with grass under a tree trunk.

10. *Afrodacarellus kivuensis* (Ryke & Loots, 1966)

Cyrtolaelaps (Gamasellus) kivuensis Ryke & Loots, 1966: 141.

Afrogamasellus kivuensis.— Loots & Ryke, 1968: 2; Lee, 1970: 33.

Afrodacarellus kivuensis.— Hurlbutt, 1974: 591.

Afrogamasellus (Foliogamasellus) kivuensis.— Karg, 1977: 344.

TYPE DEPOSITORY: Musée Royal de l'Afrique Centrale, Tervuren, Belgium.

TYPE LOCALITY AND HABITAT: [Democratic Republic of the Congo], Mont Kabobo, Kyimbi, Katanga, October 1958, in soil.

11. *Afrodacarellus leleupi* (Ryke & Loots, 1966)

Cyrtolaelaps (Gamasellus) leleupi Ryke & Loots, 1966: 139.

Afrogamasellus leleupi.— Loots & Ryke, 1968: 2; Lee, 1970: 33.

Afrodacarellus leleupi.— Hurlbutt, 1974: 591.

Afrogamasellus (Foliogamasellus) leleupi.— Karg, 1977: 344.

TYPE DEPOSITORY: Musée Royal de l'Afrique Centrale, Tervuren, Belgium.

TYPE LOCALITY AND HABITAT: [Democratic Republic of the Congo], Kivu Province,
27 December 1950, in soil.

12. *Afrodacarellus longipodus* Hurlbutt, 1974

Afrodacarellus longipodus Hurlbutt, 1974: 594.

TYPE DEPOSITORY: unknown.

TYPE LOCALITY AND HABITAT: Tanzania, hill south of Morogoro Agricultural
College, [Morogoro], alt. 900 m, 26 April 1968, in soil under patch of trees.

13. *Afrodacarellus lubalensis* (Loots, 1969)

Afrogamasellus lubalensis Loots, 1969a: 79.

Afrogamasellus (Latoamasellus) lubalensis.— Karg, 1979: 206; Karg, 2003b: 27.

Afrodacarellus lubalensis.— new combination.

TYPE DEPOSITORY: Museu do Dundo, Dundo, Angola.

TYPE LOCALITY AND HABITAT: Angola, Tshihumbwe River, affluent of the Lubalo
River, Camaxilo, Lunda, 6 July 1962, in forest soil.

14. *Afrodacarellus lunguensis* (Ryke & Loots, 1966)

Cyrtolaelaps (Gamasellus) linguensis Ryke & Loots, 1966: 149.

Afrogamasellus linguensis.— Loots & Ryke, 1968: 1; Lee, 1970: 33.

Afrodacarellus linguensis.— Hurlbutt, 1974: 590.

Afrogamasellus (Foliogamasellus) linguensis.— Karg, 1977: 344.

TYPE DEPOSITORY: Musée Royal de l'Afrique Centrale, Tervuren, Belgium.

TYPE LOCALITY AND HABITAT: [Democratic Republic of the Congo], Lac Lungue,
Kivu Province, May 1958, in soil in bamboo forest [Poaceae].

15. *Afrodacarellus lupangaensis* Hurlbutt, 1974

Afrodacarellus lupangaensis Hurlbutt, 1974: 602.

TYPE DEPOSITORY: unknown.

TYPE LOCALITY AND HABITAT: Tanzania, base of Mount Lupanga, Uluguru

Mountains, Morogoro, alt. 1350 m, 30 October 1966, in leaf litter and humus from
regenerated rain forest.

16. *Afrodacarellus machadoi* (Loots, 1969)

Afrogamasellus machadoi Loots, 1969a: 65.

Afrodacarellus machadoi.— Hurlbutt, 1974: 598.

Afrogamasellus (Foliogamasellus) machadoi.— Karg, 1977: 344; Karg & Schorlemmer, 2009: 66.

TYPE DEPOSITORY: Museu do Dundo, Dundo, Angola.

TYPE LOCALITY AND HABITAT: Angola, by Tshihumbwe River, affluent of the Lubalo River, Camaxilo, Lunda, 6 July 1962, in forest soil.

17. *Afrodacarellus minutus* Hurlbutt, 1974

Afrodacarellus minutus Hurlbutt, 1974: 609.

TYPE DEPOSITORY: United States National Museum of Natural History Acari Collection, Beltsville, Maryland, USA.

TYPE LOCALITY AND HABITAT: Tanzania, in the upper part of a valley between the Morogoro Regional Forestry Office and Mount Lupanga, near Morogoro, alt. 1150 m, 22 May 1968, on leaves and twigs under clump of trees.

18. *Afrodacarellus mongii* (Hurlbutt, 1974)

Afrogamasellus mongii Hurlbutt, 1974: 574.

Afrogamasellus mongii.— Antony, 1986: 148.

Afrodacarellus mongii.— new combination.

TYPE DEPOSITORY: unknown.

TYPE LOCALITY AND HABITAT: Tanzania, near Marangu track, Mount Kilimanjaro,
alt. 2100 m, 10 June 1972, in forest litter.

19. *Afrodacarellus mossi* Hurlbutt, 1974

Afrodacarellus mossi Hurlbutt, 1974: 606.

TYPE DEPOSITORY: unknown.

TYPE LOCALITY AND HABITAT: Tanzania, summit of Mount Bondwa, Uluguru
Mountains, alt. 2120 m, 10 June 1968, in moss on branch of tree.

20. *Afrodacarellus msituni* Hurlbutt, 1974

Afrodacarellus msituni Hurlbutt, 1974: 604.

TYPE DEPOSITORY: unknown.

TYPE LOCALITY AND HABITAT: Tanzania, in the upper part of a valley between the
Morogoro Regional Forestry Office and Mount Lupanga, [Morogoro], alt. 1100 m,
23 January 1968, on dead grass stems and soil near clump of trees.

21. *Afrodacarellus myersi* (Loots, 1969)

Afrogamasellus myersi Loots, 1969a: 77.

Afrogamasellus myersi.— Hurlbutt, 1974: 570.

Afrogamasellus (Latogamasellus) meyersi [sic].— Karg, 1979: 207.

Afrogamasellus (Latogamasellus) myersi.— Karg, 2003b: 27.

Afrodacarellus myersi.— new combination.

TYPE DEPOSITORY: Museu do Dundo, Dundo, Angola.

TYPE LOCALITY AND HABITAT: South Africa, Nelspruit, [Mpumalanga], 1965, in soil under *Citrus* sp. [Rutaceae].

22. *Afrodacarellus ngorongoroensis* Hurlbutt, 1974

Afrodacarellus ngorongoroensis Hurlbutt, 1974: 597.

TYPE DEPOSITORY: unknown.

TYPE LOCALITY AND HABITAT: Tanzania, rim of Ngorongoro Crater, [Arusha Region], alt. 2300 m, 3 January 1968, among twigs and bits of wood under trees.

23. *Afrodacarellus novembus* Hurlbutt, 1974

Afrodacarellus novembus Hurlbutt, 1974: 602.

TYPE DEPOSITORY: United States National Museum of Natural History Acari
Collection, Beltsville, Maryland, USA.

TYPE LOCALITY AND HABITAT: Tanzania, near path through rain forest, track from
Morningside to the top of Mount Bondwa, Uluguru Mountains, [Morogoro], alt.
1500 m, 4 November 1967, in soil and on fern roots [Pteridophyta].

24. *Afrodacarellus pili* Hurlbutt, 1974

Afrodacarellus pili Hurlbutt, 1974: 600.

TYPE DEPOSITORY: United States National Museum of Natural History Acari
Collection, Beltsville, Maryland, USA.

TYPE LOCALITY AND HABITAT: Tanzania, summit of Mount Bondwa, Uluguru
Mountains, [Morogoro], alt. 2120 m, 10 June 1968, on leaves and humus from
elfin forest.

25. *Afrodacarellus poci* Hurlbutt, 1974

Afrodacarellus poci Hurlbutt, 1974: 607.

TYPE DEPOSITORY: unknown.

TYPE LOCALITY AND HABITAT: Tanzania, summit of Mount Bondwa, Uluguru
Mountains, [Morogoro], alt. 2125 m, 30 May 1972, in moss on branch of tree.

26. *Afrodacarellus reticulatus* (Loots, 1969)

Afrogamasellus reticulatus Loots, 1969a: 68.

Afrodacarellus reticulatus.— Hurlbutt, 1974: 591.

Afrogamasellus (Foliogamasellus) reticulatus.— Karg, 1977: 344; Karg & Schorlemmer, 2009: 66.

TYPE DEPOSITORY: Museu do Dundo, Dundo, Angola.

TYPE LOCALITY AND HABITAT: Angola, Tshihumbwe River, affluent of the Lubalo River, Camaxilo, Lunda, 6 July 1962, in forest soil.

27. *Afrodacarellus ruwenzoriensis* (Loots, 1969)

Afrogamasellus ruwenzoriensis Loots, 1969a: 71.

Afrodacarellus ruwenzoriensis.— Hurlbutt, 1974: 594.

Afrogamasellus (Foliogamasellus) ruwenzoriensis.— Karg, 1977: 344; Karg & Schorlemmer, 2009: 66.

TYPE DEPOSITORY: British Museum (Natural History), London, England.

TYPE LOCALITY AND HABITAT: Uganda, near Nyinabitaba, Ruwenzori, alt. 8650 feet, 1952, in soil.

28. *Afrodacarellus squamosus* (Karg, 1977)

Afrogamasellus (*Latogamasellus*) *squamosus* Karg, 1977: 345.

Afrogamasellus (*Latogamasellus*) *squamosus*.— Karg, 1979: 207; Karg, 2003b: 27.

Latogamasellus squamosus.— Antony, 1986: 154.

Afrodacarellus squamosus.— new combination.

TYPE DEPOSITORY: Ungarische Naturwissenschaftliches Museum, Budapest, Hungary.

TYPE LOCALITY AND HABITAT: Argentina, near Norquinco and El Bolsón, Rio

Negro, 23 February 1961, in leaf litter of *Mulinum spinosum* [Apiaceae].

29. *Afrodacarellus succinctus* (Berlese, 1916)

Gamasellus succinctus Berlese, 1916a: 160.

Cyrtolaelaps (*Gamasellus*) *succinctus*.— Ryke, 1962b: 48; Ryke & Loots, 1966: 124.

Afrogamasellus succinctus.— Loots & Ryke, 1968: 2; Lee, 1970: 33; Hurlbutt, 1974: 571.

Afrogamasellus (*Foliogamasellus*) *succinctus*.— Karg, 1977: 344.

Gamasellus succinctus.— Castagnoli & Pegazzano, 1985: 404.

Afrodacarellus succinctus.— new combination.

TYPE DEPOSITORY: Istituto Sperimentale per la Zoologia Agraria, Florence, Italy.

TYPE LOCALITY AND HABITAT: East Africa, on unspecified substrate.

30. *Afrodacarellus unospinae* (Karg, 2003)

Afrogamasellus unospinae Karg, 2003b: 27.

Afrogamasellus (*Latogamasellus*) *unospinae*.— Karg, 2003b: 27.

Afrodacarellus unospinae.— new combination.

TYPE DEPOSITORY: Staatliches Museum für Naturkunde Görlitz, Görlitz, Germany.

TYPE LOCALITY AND HABITAT: Ecuador, Calderon, 1990, in litter under bamboo forest [Poaceae].

Genus *Afrogamasellus* Loots & Ryke, 1968

Afrogamasellus Loots & Ryke, 1968: 2 (described in Rhodacaridae Oudemans).

Afrogamasellus.— Loots, 1969a: 60; Loots, 1969b: 359; Loots, 1969c: 182; Lee, 1970: 30;

Hurlbutt, 1974: 568; Karg, 1977: 343; Loots, 1979: 2; Karg, 2003b: 26; Karg & Schorlemmer, 2009: 65.

Afrogamasellus (*Afrogamasellus*).— Karg & Schorlemmer, 2009: 65.

Type species: *Cyrtolaelaps* (*Gamasellus*) *franzi* Loots & Ryke, 1968, by original designation.

Afrogamasellus (*Podalogamasellus*) Karg, 1977: 345 (described in Rhodacaridae Oudemans).

Afrogamasellus (*Podalogamasellus*).— Karg, 2003b: 26; Karg & Schorlemmer, 2009: 65.

Type species: *Gamasellus tetrastigma* Berlese, 1916a, by original designation.

Afrogamasellus (*Jugulogamasellus*) Karg, 1977: 345 (described in Rhodacaridae Oudemans) [objective junior synonym of *Afrogamasellus* (*Afrogamasellus*)].

Type species: *Cyrtolaelaps* (*Gamasellus*) *franzi* Loots & Ryke, 1968, by original designation.

Karg (1977) designated as type of *Afrogramasellus* (*Jugulogamasellus*) the species designated by Loots & Ryke (1968) as type of the *Afrogamasellus*, which makes that subgenus an objective junior synonym of *Afrogramasellus* (*Afrogamasellus*).

31. *Afrogamasellus celisi* Loots, 1969

Afrogamasellus celisi Loots, 1969b: 367.

Afrogamasellus celisi.— Lee, 1970: 34; Hurlbutt, 1974: 570.

TYPE DEPOSITORY: Musée Royal de l'Afrique Centrale, Tervuren, Belgium.

TYPE LOCALITY AND HABITAT: [Democratic Republic of the Congo], near Lubero, Kivu Province, 3 July 1957, in soil.

32. *Afrogamasellus congoensis* (Ryke & Loots, 1966)

Cyrtolaelaps (*Gamasellus*) *uviraensis congoensis* Ryke & Loots, 1966: 146.

Afrogamasellus uviraensis congoensis.— Loots & Ryke, 1968: 2 (implicit); Lee, 1970: 33.

Afrodacarellus congoensis.— Hurlbutt, 1974: 590.

TYPE DEPOSITORY: Musée Royal de l'Afrique Centrale, Tervuren, Belgium.

TYPE LOCALITY AND HABITAT: [Democratic Republic of the Congo], near Lake Tanganyika, Uvira, Kivu Province, January 1960, in soil.

33. *Afrogamasellus evansi* Loots, 1969

Afrogamasellus evansi Loots, 1969b: 377.

Afrogamasellus evansi.— Lee, 1970: 34; Hurlbutt, 1974: 570.

TYPE DEPOSITORY: British Museum (Natural History), London, England.

TYPE LOCALITY AND HABITAT: Uganda, near Nyinabitaba, Ruwenzori, alt. 8650 feet, 1952, in soil.

34. *Afrogamasellus franzi* (Ryke & Loots, 1966)

Cyrtolaelaps (Gamasellus) franzi Ryke & Loots, 1966: 124.

Afrogamasellus franzi.— Loots & Ryke, 1968: 2; Lee, 1970: 33; Loots, 1971: 3; Hurlbutt, 1974: 571.

Afrogamasellus (Jugulogamasellus) franzi.— Karg, 1977: 345.

TYPE DEPOSITORY: Institute for Zoological Research of the Potchefstroom University,
Potchefstroom, South Africa.

TYPE LOCALITY AND HABITAT: Kenya, on western side of Mount Meru, alt. 2600 m,
9 July 1962, in moss and litter in a *Hagenia* forest [Rosaceae].

35. *Afrogamasellus franzoides* Hurlbutt, 1974

Afrogamasellus franzoides Hurlbutt, 1974: 573.

TYPE DEPOSITORY: unknown.

TYPE LOCALITY AND HABITAT: Tanzania, upper part of a valley between the
Morogoro Regional Forestry Office and Mount Lupanga, Morogoro, alt. 3600 feet,
12 June 1966, in soil under tree.

36. *Afrogamasellus isthmus* Hurlbutt, 1974

Afrogamasellus isthmus Hurlbutt, 1974: 576.

TYPE DEPOSITORY: United States National Museum of Natural History Acari
Collection, Beltsville, Maryland, USA.

TYPE LOCALITY AND HABITAT: Tanzania, adjacent to Morogoro River, Morogoro,
alt. 550 m, 11 May 1966, in duff under bushes and trees.

37. *Afrogamasellus kahusiensis* Loots, 1969

Afrogamasellus kahusiensis Loots, 1969b: 372.

Afrogamasellus kahusiensis.— Lee, 1970: 34; Hurlbutt, 1974: 570.

TYPE DEPOSITORY: Musée Royal de l'Afrique Centrale, Tervuren, Belgium.

TYPE LOCALITY AND HABITAT: [Democratic Republic of the Congo], Kaleke,
northeast of Kahusi, Kivu Province, 29 June 1951, in soil.

38. *Afrogamasellus kilimanjaroensis* (Ryke & Loots, 1966)

Cyrtolaelaps (Gamasellus) kilimanjaroensis Ryke & Loots, 1966: 133.

Afrogamasellus kilimanjaroensis.— Loots & Ryke, 1968: 2; Lee, 1970: 33; Hurlbutt, 1974:
573.

TYPE DEPOSITORY: Institute for Zoological Research of the Potchefstroom University,
Potchefstroom, South Africa.

TYPE LOCALITY AND HABITAT: Tanzania, above Maskame, Mount Kilimanjaro, in
mosses on trees in a mountain forest, alt. 2400 m.

39. *Afrogamasellus latigynia* Hurlbutt, 1974

Afrogamasellus latigynia Hurlbutt, 1974: 575.

TYPE DEPOSITORY: United States National Museum of Natural History Acari

Collection, Beltsville, Maryland, USA.

TYPE LOCALITY AND HABITAT: Tanzania, upper part of a valley between the

Morogoro Regional Forestry Office and Mount Lupanga, Morogoro, alt. 1100 m,

12 June 1966, in soil under tree.

40. *Afrogamasellus lokelei* Van Daele, 1976

Afrogamasellus lokelei Van Daele, 1976: 339.

TYPE DEPOSITORY: Chair of Zoology, Faculty of Agricultural Sciences, State

University of Ghent, Belgium.

TYPE LOCALITY AND HABITAT: [Democratic Republic of the Congo], Yangambi, 1

November 1974, in litter at the base of a decaying banana plant [Musaceae].

41. *Afrogamasellus lootsi* Hurlbutt, 1974

Afrogamasellus lootsi Hurlbutt, 1974: 578.

TYPE DEPOSITORY: unknown.

TYPE LOCALITY AND HABITAT: Tanzania, adjacent to Morogoro River, Morogoro, alt. 550 m, 15 February 1968, on dead leaves, twigs and in humus under bushes and trees.

42. *Afrogamasellus luberoensis luberoensis* Loots, 1968

Afrogamasellus luberoensis luberoensis Loots, 1968: 366.

Afrogamasellus luberoensis luberoensis.— Antony, 1986: 147.

Afrogamasellus luberoensis.— Lee, 1970: 34; Hurlbutt, 1974: 569 (part).

TYPE DEPOSITORY: Musée Royal de l'Afrique Centrale, Tervuren, Belgium.

TYPE LOCALITY AND HABITAT: [Democratic Republic of the Congo], near Kakolwe River, Lubero, Kivu Province, 21 December 1953, in soil.

42a. *Afrogamasellus luberoensis kalibuensis* Loots, 1968

Afrogamasellus luberoensis kalibuensis Loots, 1968: 370.

Afrogamasellus luberoensis kalibuensis.— Lee, 1970: 34; Antony, 1986: 147.

Afrogamasellus luberoensis.— Hurlbutt, 1974: 569 (part).

TYPE DEPOSITORY: Musée Royal de l'Afrique Centrale, Tervuren, Belgium.

TYPE LOCALITY AND HABITAT: [Democratic Republic of the Congo], near Kaliba River, Ruwenzori, 23 January 1954, in soil.

43. *Afrogamasellus lyamunguensis* Hurlbutt, 1974

Afrogamasellus lyamunguensis Hurlbutt, 1974: 581.

TYPE DEPOSITORY: unknown.

TYPE LOCALITY AND HABITAT: Tanzania, Lyamungu Research and Training Centre, Lyamungu, [Hai, Kilimanjaro Region], alt. 1300 m, 9 June 1972, fine fragments of leaves and twigs in forest.

44. *Afrogamasellus maskamensis* (Ryke & Loots, 1966)

Cyrtolaelaps (Gamasellus) maskamensis Ryke & Loots, 1966: 135.

Afrogamasellus maskamensis.— Loots & Ryke, 1968: 2; Lee, 1970: 33; Hurlbutt, 1974: 583.

TYPE DEPOSITORY: Institute for Zoological Research of the Potchefstroom University, Potchefstroom, South Africa.

TYPE LOCALITY AND HABITAT: Tanzania, above Maskame, Mount Kilimanjaro, alt. 2300 m, July 1962, in forest soil.

45. *Afrogamasellus mitigatus* (Berlese, 1923)

Gamasellus mitigatus Berlese, 1923: 250.

Cyrtolaelaps (Gamasellus) mitigatus.— Ryke, 1962b: 46.

Afrogamasellus mitigatus.— Loots & Ryke, 1968: 2; Lee, 1970: 34; Hurlbutt, 1974: 571.

Gamasellus mitigatus.— Castagnoli & Pegazzano, 1985: 257.

TYPE DEPOSITORY: Istituto Sperimentale per la Zoologia Agraria, Florence, Italy.

TYPE LOCALITY AND HABITAT: East Africa, on unspecified substrate.

46. *Afrogamasellus muhiensis* Loots, 1969

Afrogamasellus muhiensis Loots, 1969b: 369.

Afrogamasellus muhiensis.— Lee, 1970: 34; Hurlbutt 1974: 570.

TYPE DEPOSITORY: Musée Royal de l'Afrique Centrale, Tervuren, Belgium.

TYPE LOCALITY AND HABITAT: [Democratic Republic of the Congo], Mount Muhi,
Kivu Province, July 1955, in soil humus.

47. *Afrogamasellus nyinabitabaensis* Loots, 1969

Afrogamasellus nyinabitabaensis Loots, 1969b: 381.

Afrogamasellus nyinabitabaensis.— Lee, 1970: 34; Hurlbutt, 1974: 570.

TYPE DEPOSITORY: British Museum (Natural History), London, England.

TYPE LOCALITY AND HABITAT: Uganda, near Nyinabitaba, Ruwenzori, alt. 8650 feet, 1952, in soil.

48. *Afrogamasellus paratruncatus* Hurlbutt, 1974

Afrogamasellus paratruncatus Hurlbutt, 1974: 585.

TYPE DEPOSITORY: United States National Museum of Natural History Acari Collection, Beltsville, Maryland, USA.

TYPE LOCALITY AND HABITAT: Tanzania, summit of Mount Bondwa, Uluguru Mountains, [Morogoro], alt. 6900 feet, 1 May 1968, in moss.

49. *Afrogamasellus quadrisigillatus* (Berlese, 1916)

Gamasellus quadrisigillatus Berlese, 1916a: 160.

Cyrtolaelaps (Gamasellus) quadrisigillatus.— Ryke, 1962b: 48; Ryke & Loots, 1966: 124.

Afrogamasellus quadrisigillatus.— Loots & Ryke, 1968: 2; Lee, 1970: 33; Hurlbutt, 1974: 571.

Gamasellus quadrisigillatus.— Castagnoli & Pegazzano, 1985: 348.

TYPE DEPOSITORY: Istituto Sperimentale per la Zoologia Agraria, Florence, Italy.

TYPE LOCALITY AND HABITAT: East Africa, on unspecified substrate.

50. *Afrogamasellus rugegensis* Loots, 1969

Afrogamasellus rugegensis Loots, 1969b: 375.

Afrogamasellus rugegensis.— Lee, 1970: 34; Hurlbutt, 1974: 570.

TYPE DEPOSITORY: Musée Royal de l'Afrique Centrale, Tervuren, Belgium.

TYPE LOCALITY AND HABITAT: Rwanda, Rugege Forest, May 1951, in soil.

51. *Afrogamasellus tetrastigma* (Berlese, 1916)

Gamasellus tetrastigma Berlese, 1916a: 161.

Cyrtolaelaps (Gamasellus) tetrastigma.— Ryke, 1962b: 46.

Afrogamasellus tetrastigma.— Loots & Ryke, 1968: 2; Loots, 1969b: 361; Lee, 1970: 34;

Loots, 1971: 3; Hurlbutt, 1974: 571.

Afrogamasellus (Podalogamasellus) tetrastigma.— Karg, 1977: 345.

Gamasellus tetrastigma.— Castagnoli & Pegazzano, 1985: 414.

TYPE DEPOSITORY: Istituto Sperimentale per la Zoologia Agraria, Florence, Italy.

TYPE LOCALITY AND HABITAT: East Africa, on unspecified substrate.

52. *Afrogamasellus truncatus* Hurlbutt, 1974

Afrogamasellus truncatus Hurlbutt, 1974: 583.

TYPE DEPOSITORY: United States National Museum of Natural History Acari
Collection, Beltsville, Maryland, USA.

TYPE LOCALITY AND HABITAT: Tanzania, upper part of a valley between the
Morogoro Regional Forestry Office and Mount Lupanga, above Morogoro, alt.
1100 m, 18 January 1967, on dead leaves and twigs under clump of trees.

53. *Afrogamasellus uluguruensis* Hurlbutt, 1974

Afrogamasellus uluguruensis Hurlbutt, 1974: 578.

TYPE DEPOSITORY: United States National Museum of Natural History Acari
Collection, Beltsville, Maryland, USA.

TYPE LOCALITY AND HABITAT: Tanzania, summit of Mount Bondwa, Uluguru
Mountains, [Morogoro], alt. 1500 m, in leaf litter from rain forest.

54. *Afrogamasellus uviraensis* (Ryke & Loots, 1966)

Cyrtolaelaps (Gamasellus) uviraensis uviraensis Ryke & Loots, 1966: 143.

Afrogamasellus uviraensis.— Loots & Ryke, 1968: 2; Lee, 1970: 33.

Afrodacarellus uviraensis.— Hurlbutt, 1974: 590.

Afrogamasellus (Foliogamasellus) uviraensis.— Karg, 1977: 344.

TYPE DEPOSITORY: Musée Royal de l'Afrique Centrale, Tervuren, Belgium.

TYPE LOCALITY AND HABITAT: [Democratic Republic of the Congo], near Lake Tanganyika, Uvira, Kivu Province, November 1959, in soil.

Genus *Binodacarus* Castilho & Moraes, 2010

Binodacarus Castilho & Moraes, 2010: 387 (described in Rhodacaridae Oudemans).

Type species: *Binodacarus brasiliensis* Castilho & Moraes, 2010, by monotypy.

55. *Binodacarus brasiliensis* Castilho & Moraes, 2010

Binodacarus brasiliensis Castilho & Moraes, 2010: 389.

TYPE DEPOSITORY: Departamento de Entomologia e Acarologia, Escola Superior de Agricultura "Luiz de Queiroz", Universidade de São Paulo, Piracicaba, State of São Paulo, Brazil.

TYPE LOCALITY AND HABITAT: Brazil, Pirassununga, São Paulo, 3 May 2000, in soil under *Psidium guajava* [Myrtaceae].

Genus *Interrhodeus* Karg, 2000

Interrhodeus Karg, 2000a: 258 (described in Rhodacaridae Oudemans).

Type species: *Interrhodeus brevicornus* Karg, 2000, by monotypy.

56. *Interrhodeus brevicornus* Karg, 2000

Interrhodeus brevicornus Karg, 2000a: 259.

TYPE DEPOSITORY: Arachnologische Sammlung des Museums für Naturkunde, Berlin, Germany.

TYPE LOCALITY AND HABITAT: Costa Rica, La Selva, 11 June 1993, in soil.

Genus *Mediorhodacarus* Shcherbak, 1976

Mediorhodacarus Shcherbak, 1976: 949 (described in Rhodacaridae Oudemans).

Mediorhodacarus.— Shcherbak, 1980: 37.

Type species: *Mediorhodacarus tetranodulosus* Shcherbak, 1976, by monotypy.

57. *Mediorhodacarus tetranodulosus* Shcherbak, 1976

Mediorhodacarus tetranodulosus Shcherbak, 1976: 951.

Mediorhodacarus tetranodulosus.— Shcherbak, 1980: 37.

TYPE DEPOSITORY: Institute of Zoology and Biology of the All-Ukrainian Academy of Sciences (AUAS), Kiev, Ukraine.

TYPE LOCALITY AND HABITAT: Ukraine, Lanzheron Beach, Odessa, 11 July 1974, in sand (depth 30-40 cm), 3 metres from the water edge.

Genus *Minirhodacarellus* Shcherbak, 1980

Minirhodacarellus Shcherbak, 1980: 92 (described in Rhodacaridae Oudemans).

Type species: *Rhodacarellus minimus* Karg, 1961, by monotypy.

58. *Minirhodacarellus minimus* (Karg, 1961)

Rhodacarellus minimus Karg, 1961: 128.

Rhodacarus minimus.— Hirschmann, 1962: 49; Karg, 1971: 317.

Rhodacarellus minimus.— Emberson 1968: 156; Lee, 1970: 37; Bregetova & Shcherbak, 1977b: 275; Antony, 1986: 148.

Minirhodacarellus minimus.— Shcherbak, 1980: 92; Karg, 1993: 336.

TYPE DEPOSITORY: Institut für Pflanzenschutzforschung – Biologische Zentralanstalt der Deutschen Akademie der Landwirtschaftswissenschaften zu Berlin, Kleinmachnow, Germany.

TYPE LOCALITY AND HABITAT: Germany, Berlin, in cultivated soil and pasture.

Genus *Multidentorhodacarus* Karg, 2000

Multidentorhodacarus Karg, 2000b: 144 (described in Rhodacaridae Oudemans).

Rhodacarus (*Multidentorhodacarus*) Shcherbak, 1980: 72 (*nomen nudum*).

Rhodacarus (*Multidentorhodacarus*).— Karg, 1996: 170 (*nomen nudum*).

Rhodacarus (*Multidentorhodacarus*) [*sic*].— Karg, 1998: 186 (*nomen nudum*).

Multidentorhodacarus.— Karg, 2000a: 259.

Type species: *Rhodacarus denticulatus* Berlese, 1920 (by original designation, Karg, 2000b).

Multidentorhodacarus was not made available by Shcherbak (1980) because a type species for the subgenus was not specified. The name did not become available until Karg (2000b) published a description of *Multidentorhodacarus* as a genus, and stated that its type species was *M. denticulatus* (Berlese, 1920). The names of species described in the genus *Multidentorhodacarus* before 2000 are available, even though the genus name was not available at the time (*International Code of Zoological Nomenclature*, Article 11.9.3.1).

59. *Multidentorhodacarus ananasi* (Ryke, 1962)

Rhodacarus ananasi Ryke, 1962c: 82.

Rhodacarus (*Rhodacarus*) *ananasi*.— Loots, 1969a: 50.

Rhodacarus ananasi.— Lee, 1970: 29.

Multidentorhodacarus ananasi.— Karg, 2000b: 145.

TYPE DEPOSITORY: Institute for Zoological Research of the Potchefstroom University,
Potchefstroom, South Africa.

TYPE LOCALITY AND HABITAT: South Africa, Bathurst, June 1956, in soil of
pineapple fields [Bromeliaceae].

60. *Multidentorhodacarus angustacuminis* (Karg, 1998)

Rhodacarus (*Multidentrhodacarus*) [*sic*] *angustacuminis* Karg, 1998: 187.

Multidentorhodacarus angustacuminis.— Karg, 2000b: 148.

TYPE DEPOSITORY: Arachnologische Sammlung des Museums für Naturkunde, Berlin,
Germany.

TYPE LOCALITY AND HABITAT: Ecuador, between Pifo and Papallacta, Pichincha
Province, alt. 4100 m, 14 April 1989, in moss and withered plant-debris from
places under bushes.

61. *Multidentorhodacarus brevicuspidis* Karg, 2000

Multidentorhodacarus brevicuspidis Karg, 2000c: 211.

TYPE DEPOSITORY: Staatliches Museum für Naturkunde Görlitz, Görlitz, Germany.

TYPE LOCALITY AND HABITAT: Costa Rica, near La Selva, December 1993, in soil.

62. *Multidentorhodacarus brevisetosus* Karg, 2000

Multidentorhodacarus brevisetosus Karg, 2000c: 212.

TYPE DEPOSITORY: Staatliches Museum für Naturkunde Görlitz, Görlitz, Germany.

TYPE LOCALITY AND HABITAT: Costa Rica, near La Selva, August 1993, in soil.

63. *Multidentorhodacarus denticulatus* (Berlese, 1920)

Rhodacarus denticulatus Berlese, 1920: 164.

Rhodacarus denticulatus.— Willmann, 1951: 119; Athias-Henriot, 1961: 499; Emberson, 1968: 156; Lee, 1970: 29; Karg, 1971: 318; Shcherbak & Furman, 1975: 47; Bregetova & Shcherbak, 1977b: 266; Castagnoli & Pegazzano, 1985: 111; Karg, 1993: 331; Karg, 1996: 170; Karg, 1998: 187.

Rhodacarus (Multidentorhodacarus) denticulatus.— Shcherbak, 1980: 72; Farrier & Hennessey, 1993: 133.

Rhodacarus (Multidentrhodacarus) [sic] denticulatus.— Karg, 1998: 187.

Multidentorhodacarus denticulatus.— Karg, 2000b: 145.

Rhodacarus guevarai Guevara-Benitez, 1974: 207 (synonymy by Shcherbak, 1980: 72).

TYPE DEPOSITORY of *M. denticulatus*: Istituto Sperimentale per la Zoologia Agraria, Florence, Italy; of *R. guevarai*: Laboratorio de Acarología del Instituto “Lopez-Neyra” de Parasitología de Granada, Granada, Spain.

TYPE LOCALITY AND HABITAT of *M. denticulatus*: Indonesia, Semarang, Java, and USA, Lake City, Columbia County, Florida, on unspecified substrate; of *R. guevarai*: Spain, Jardín Experimental del Instituto “Lopez-Neyra” de Parasitología de Granada, [Armillá], Granada, June 1971, in soil under *Piptatherum miliaceum* [Poaceae].

NOTE: Shcherbak and Furman (1975) listed *M. ruwenzoriensis* Loots, 1969 as a synonym of *M. denticulatus*, but Shcherbak (1980) considered this synonymy as questionable (see below). Emberson (1968) also pointed out that Berlese's original type series was probably heterogeneous.

64. *Multidentorhodacarus differentis* Karg & Schorlemmer, 2009

Multidentorhodacarus differentis Karg & Schorlemmer, 2009: 67.

TYPE DEPOSITORY: Arachnologische Sammlung des Museums für Naturkunde, Berlin, Germany.

TYPE LOCALITY AND HABITAT: Ecuador, between Puerto Napo and Ahuano Tenatol, 1990, in litter of a cacao plantation [Sterculiaceae].

65. *Multidentorhodacarus minutocarpus* (Karg, 1998)

Rhodacarus (*Multidentorhodacarus*) [*sic*] *minutocarpus* Karg, 1998: 186.

Multidentorhodacarus minutocarpus.— Karg, 2000b: 145.

TYPE DEPOSITORY: Arachnologische Sammlung des Museums für Naturkunde, Berlin,
Germany.

TYPE LOCALITY AND HABITAT: Ecuador, Pia Santa Rosa, near San Francisco,
Pichincha Province, alt. 2990 m, 13 April 1989, in moss and soil from a roadside.

66. *Multidentorhodacarus paulista* Castilho & Moraes, 2010

Multidentorhodacarus paulista Castilho & Moraes, 2010: 392.

TYPE DEPOSITORY: Departamento de Entomologia e Acarologia, Escola Superior de
Agricultura “Luiz de Queiroz”, Universidade de São Paulo, Piracicaba, State of
São Paulo, Brazil.

TYPE LOCALITY AND HABITAT: Brazil, Piracicaba, São Paulo, 11 November 2000, in
soil under *Syagrus oleracea* [Arecaceae].

67. *Multidentorhodacarus pennacornutus* Karg, 2000

Multidentorhodacarus pennacornutus Karg, 2000a: 259.

Multidentorhodacarus pennacornutus.— Karg, 2000b: 145.

TYPE DEPOSITORY: Arachnologische Sammlung des Museums für Naturkunde, Berlin,
Germany.

TYPE LOCALITY AND HABITAT: Cuba, Pinar del Rio, 1975, in litter.

68. *Multidentorhodacarus ruwenzoriensis* (Loots, 1969)

Rhodacarus (Rhodacarus) ruwenzoriensis Loots, 1969a: 54.

Multidentorhodacarus ruwenzoriensis.— Karg, 2000b: 148.

TYPE DEPOSITORY: British Museum (Natural History), London, England.

TYPE LOCALITY AND HABITAT: Uganda, near Nyabitaba, Ruwenzori, alt. 8650 feet,
1952, in soil.

NOTE: Shcherbak & Furman (1975) synonymised *R. ruwenzoriensis* with *R. denticulatus*.

However, Shcherbak (1980) stated that these two species were very similar, but the synonymy could not be confirmed until they were examined more closely. We therefore treat these two species as separate for the moment.

69. *Multidentorhodacarus sogdianus* (Shcherbak, 1980)

Rhodacarus (Multidentorhodacarus) sogdianus Shcherbak, 1980: 74.

Multidentorhodacarus sogdianus.— Karg, 2000b: 145.

TYPE DEPOSITORY: Institute of Zoology and Biology of the All-Ukrainian Academy of Sciences (AUAS), Kiev, Ukraine.

TYPE LOCALITY AND HABITAT: Tajikistan, Ramidskoe Valley, Gissar Range, 23

April 1978, in soil under rock along a brook.

70. *Multidentorhodacarus squamosus* Karg, 2000

Multidentorhodacarus squamosus Karg, 2000b: 144.

TYPE DEPOSITORY: Arachnologische Sammlung des Museums für Naturkunde, Berlin,
Germany.

TYPE LOCALITY AND HABITAT: Costa Rica, La Selva, March 1993, in primary forest.

71. *Multidentorhodacarus sublapideus* (Ryke, 1962)

Rhodacarus sublapideus Ryke, 1962c: 82.

Rhodacarus (*Rhodacarus*) *sublapidius* [*sic*].— Loots, 1969a: 50.

Rhodacarus sublapideus.— Lee, 1970: 29.

Multidentorhodacarus sublapideus.— Karg, 2000b: 145.

TYPE DEPOSITORY: Institute for Zoological Research of the Potchefstroom University,
Potchefstroom, South Africa.

TYPE LOCALITY AND HABITAT: South Africa, University campus, Potchefstroom,
March 1960, in soil in termite's nest under stone.

72. *Multidentorhodacarus tertius* (Karg, 1996)

Rhodacarus (*Multidentorhodacarus*) *tertius* Karg, 1996: 171.

Multidentorhodacarus tertius.— Karg, 2000b: 148.

TYPE DEPOSITORY: Arachnologische Sammlung des Museums für Naturkunde, Berlin, Germany.

TYPE LOCALITY AND HABITAT: New Caledonia, near Lifou, 20 February 1977, in primary forest.

73. *Multidentorhodacarus thysi* (Jordaan, Loots & Theron, 1988)

Rhodacarus thysi Jordaan, Loots & Theron, 1988: 279.

Multidentorhodacarus thysi.— new combination.

TYPE DEPOSITORY: Institute for Zoological Research of the Potchefstroom University, Potchefstroom, South Africa.

TYPE LOCALITY AND HABITAT: South Africa, 20 km south of Kuruman, Northern Cape, 30 October 1977, in soil under *Tarchonanthus* sp. [Asteraceae].

74. *Multidentorhodacarus triramulus* (Karg, 1998)

Rhodacarus (*Multidentorhodacarus*) [*sic*] *triramulus* Karg, 1998: 187.

Multidentorhodacarus triramulus.— Karg, 2000b: 145.

TYPE DEPOSITORY: Arachnologische Sammlung des Museums für Naturkunde, Berlin, Germany.

TYPE LOCALITY AND HABITAT: Ecuador, Rio Guajalito, Las Palmeras, Pichincha Province, alt. 1850 m, 18 April 1989, in moss from the vertical soil-wall of a riverside.

Genus *Paragamasellevans* Loots & Ryke, 1968

Paragamasellevans Loots & Ryke, 1968: 3 (described in Rhodacaridae Oudemans).

Paragamasellevans.— Loots, 1969c: 183; Lee, 1970: 193; Loots, 1979: 2.

Type species: *Paragamasellevans michaeli* Loots & Ryke, 1968, by original designation.

75. *Paragamasellevans michaeli* Loots & Ryke, 1968

Paragamasellevans michaeli Loots & Ryke, 1968: 5.

Paragamasellevans michaeli.— Loots, 1971: 7; Silva, 2007: 84.

TYPE DEPOSITORY: Institute for Zoological Research of the Potchefstroom University, Potchefstroom, South Africa.

TYPE LOCALITY AND HABITAT: South Africa, Magoebaskloof, Transvaal, 1963, in forest soil.

76. *Paragamasellevans vandenbergi* Loots & Ryke, 1968

Paragamasellevans vandenbergi Loots & Ryke, 1968: 12.

Paragamasellevans vandenbergi.— Antony, 1986: 146; Silva, 2007: 84.

TYPE DEPOSITORY: Institute for Zoological Research of the Potchefstroom University,
Potchefstroom, South Africa.

TYPE LOCALITY AND HABITAT: South Africa, Magoebaskloof, Transvaal, 1963, in
forest soil.

Genus *Pararhodacarus* Jordaan, Loots & Theron, 1988

Pararhodacarus Jordaan, Loots & Theron, 1988: 275 (described in Rhodacaridae
Oudemans).

Type species: *Pararhodacarus intermedius* Jordaan, Loots & Theron, 1988, by monotypy.

77. *Pararhodacarus intermedius* Jordaan, Loots & Theron, 1988

Pararhodacarus intermedius Jordaan, Loots & Theron, 1988: 276.

TYPE DEPOSITORY: Institute for Zoological Research of the Potchefstroom University,
Potchefstroom, South Africa.

TYPE LOCALITY AND HABITAT: South Africa, 28 km north of Kuruman, Northern Cape, 2 December 1977, in soil under *Tarchonanthus* sp. [Asteraceae].

Genus *Pennarhodeus* Karg, 2000

Pennarhodeus Karg, 2000a: 255 (described in Rhodacaridae Oudemans).

Type species: *Pennarhodeus pennatus* Karg, 2000, by original designation.

78. *Pennarhodeus brevipennatus* Karg, 2000

Pennarhodeus brevipennatus Karg, 2000c: 211.

TYPE DEPOSITORY: Staatliches Museum für Naturkunde Görlitz, Görlitz, Germany.

TYPE LOCALITY AND HABITAT: Costa Rica, 3 August 1993, in soil and litter.

NOTE: Species described based only on an adult male.

79. *Pennarhodeus decoris* Karg, 2000

Pennarhodeus decoris Karg, 2000a: 255.

Pennarhodeus decoris.— Karg, 2000c: 211.

TYPE DEPOSITORY: Arachnologische Sammlung des Museums für Naturkunde, Berlin, Germany.

TYPE LOCALITY AND HABITAT: Cuba, Pinar del Rio, 1976, in soil.

80. *Pennarhodeus pennatus* Karg, 2000

Pennarhodeus pennatus Karg, 2000a: 255.

Pennarhodeus pennatus.— Karg, 2000c: 211.

TYPE DEPOSITORY: Arachnologische Sammlung des Museums für Naturkunde, Berlin,
Germany.

TYPE LOCALITY AND HABITAT: Cuba, Pinar del Rio, 1976, in soil.

81. *Pennarhodeus turris* Karg, 2000

Pennarhodeus turris Karg, 2000a: 257.

Pennarhodeus turris.— Karg, 2000c: 211.

TYPE DEPOSITORY: Arachnologische Sammlung des Museums für Naturkunde, Berlin,
Germany.

TYPE LOCALITY AND HABITAT: Cuba, Pinar del Rio, 1976, in soil.

NOTE: Species described based only an adult male.

Genus *Poropodalius* Karg, 2000

Poropodalius Karg, 2000a: 252 (described in Rhodacaridae Oudemans).

Poropodalius.— Karg & Schorlemmer, 2009: 66.

Type species: *Poropodalius hexapennatus* Karg, 2000, by original designation.

82. *Poropodalius acutus* Karg, 2000

Poropodalius acutus Karg, 2000a: 253.

Poropodalius acutus.— Karg & Schorlemmer, 2009: 67.

TYPE DEPOSITORY: Arachnologische Sammlung des Museums für Naturkunde, Berlin,
Germany.

TYPE LOCALITY AND HABITAT: Cuba, Sierra Esperon, 1977, in soil.

83. *Poropodalius basisetae* Karg, 2000

Poropodalius basisetae Karg, 2000a: 255.

Poropodalius basisetae.— Karg & Schorlemmer, 2009: 67.

TYPE DEPOSITORY: Arachnologische Sammlung des Museums für Naturkunde, Berlin,
Germany.

TYPE LOCALITY AND HABITAT: Cuba, Pinar del Rio, 1976, in litter.

84. *Poropodalius crispus* Karg, 2000

Poropodalius crispus Karg, 2000a: 253.

Poropodalius crispus.— Karg & Schorlemmer, 2009: 67.

TYPE DEPOSITORY: Arachnologische Sammlung des Museums für Naturkunde, Berlin,
Germany.

TYPE LOCALITY AND HABITAT: Cuba, Pinar del Rio, 1976, in litter.

85. *Poropodalius hexapennatus* Karg, 2000

Poropodalius hexapennatus Karg, 2000a: 252.

Poropodalius hexapennatus.— Karg & Schorlemmer, 2009: 67.

TYPE DEPOSITORY: Arachnologische Sammlung des Museums für Naturkunde, Berlin,
Germany.

TYPE LOCALITY AND HABITAT: Cuba, Pinar del Rio, 1976, in soil.

86. *Poropodalius medioflagelli* Karg & Schorlemmer, 2009

Poropodalius medioflagelli Karg & Schorlemmer, 2009: 66.

TYPE DEPOSITORY: Arachnologische Sammlung des Museums für Naturkunde, Berlin,
Germany.

TYPE LOCALITY AND HABITAT: Venezuela, near the street from Caracas to La Guaira, 1973, in litter and soil.

Genus *Protogamasellopsis* Evans & Purvis, 1987

Protogamasellopsis Evans & Purvis, 1987: 855 (described in Ascidae Voigts & Oudemans).

Protogamasellopsis.— Karg, 1994a: 123; Karg, 1994b: 207; Halliday *et al.*, 1998: 2; Karg, 2007: 123.

Type species: *Protogamasellopsis corticalis* Evans & Purvis, 1987, by original designation.

Rhodacarella Moraza, 2004: 2 (described in Rhodacaridae Oudemans) (**new synonymy**, following M.L. Moraza, personal communication, 2007).

Type species: *Rhodacarella cavernicola* Moraza, 2004, by monotypy.

87. *Protogamasellopsis corticalis* Evans & Purvis, 1987

Protogamasellopsis corticalis Evans & Purvis, 1987: 856.

Protogamasellopsis corticalis.— Karg, 1994a: 124; Karg, 1994b: 208; Shaw, 1999: 45; Karg, 2007: 124.

TYPE DEPOSITORY: British Museum (Natural History), London, England.

TYPE LOCALITY AND HABITAT: Saint Helena [South Atlantic island], Jamestown, public gardens, under the dead bark of a *Citrus* sp. [Rutaceae] (possibly imported from Cape Province, South Africa).

88. *Protogamasellopsis dioscorus* (Manson, 1972)

Protogamasellus dioscorus Manson, 1972: 437.

Protogamasellopsis dioscorus.— Evans & Purvis, 1987: 855; Karg, 1994a: 123; Karg, 1994b: 208; Karg, 2007: 124; Castilho & Moraes, 2010: 397.

TYPE DEPOSITORY: Collection of the Department of Agriculture, Levin, New Zealand.

TYPE LOCALITY AND HABITAT: New Zealand, Auckland International Airport, 19 June 1969, intercepted on yam [Dioscoreaceae] from Tonga.

89. *Protogamasellopsis granulosis* Karg, 1994

Protogamasellopsis granulosis Karg, 1994b: 208.

Protogamasellopsis granulosis.— Karg, 2007: 124.

TYPE DEPOSITORY: Arachnologische Sammlung des Museums für Naturkunde, Berlin, Germany.

TYPE LOCALITY AND HABITAT: Galapagos Islands, Cueva Bella Vista, Bella Vista, Santa Cruz, 15-25 May 1985, in trap with manure.

90. *Protogamasellopsis leptosomae* Karg, 1994

Protogamasellopsis leptosomae Karg, 1994b: 210.

Protogamasellopsis leptosomae.— Karg, 2007: 123.

TYPE DEPOSITORY: Arachnologische Sammlung des Museums für Naturkunde, Berlin, Germany.

TYPE LOCALITY AND HABITAT: Galapagos Islands, Puntudo, Santa Cruz, 10 March 1985, in litter of fern [Pteridophyta] and pieces of wood.

91. *Protogamasellopsis posnaniensis* Wiśniewski & Hirschmann, 1991

Protogamasellopsis posnaniensis Wiśniewski & Hirschmann, 1991a: 189.

Protogamasellopsis posnaniensis.— Karg, 1993: 369; Karg, 1994b: 208; Karg, 2007: 123; Castilho *et al.*, 2009: 165.

Rhodacarella cavernicola Moraza, 2004: 4 (new synonymy, following M.L. Moraza, personal communication, 2007).

TYPE DEPOSITORY of *P. posnaniensis*: Lehrstuhl für Forst- und Umweltschutz der Landwirtschaftlichen Akademie in Poznań, Poznań, Poland; of *R. cavernicola*: Florida Collection of Arthropods, Division of Plant Industry, Gainesville, Florida, USA.

TYPE LOCALITY AND HABITAT of *P. posnaniensis*: Poland, Poznań, July to August 1989, in litter of *Phoenix* sp. [Aracaceae] in greenhouse; of *R. cavernicola*: USA, Kartchner Caverns State Park, Cochise County, Arizona, 19 May 1990, on bat guano.

92. *Protogamasellopsis praeendopodalis* Karg, 1994

Protogamasellopsis praeendopodalis Karg, 1994a: 123.

Protogamasellopsis praeendopodalis.— Karg, 1994b: 208; Karg, 2007: 123.

TYPE DEPOSITORY: Arachnologische Sammlung des Museums für Naturkunde, Berlin, Germany.

TYPE LOCALITY AND HABITAT: Galapagos Islands, Fernandina, 18 March 1985, in litter of grass and sand in coastal area.

93. *Protogamasellopsis transversus* Karg, 2000

Protogamasellopsis transversus Karg, 2000a: 252.

Protogamasellopsis transversus.— Karg, 2007: 123.

TYPE DEPOSITORY: Arachnologische Sammlung des Museums für Naturkunde, Berlin, Germany.

TYPE LOCALITY AND HABITAT: Ecuador, Cotopaxi Province, 1973, in paramo.

Genus *Rhodacarellus* Willmann, 1935

Rhodacarellus Willmann, 1935: 429 (described in Rhodacaridae Oudemans).

Rhodacarellus.— Evans, 1957: 221; Sheals, 1958: 302; Lee, 1970: 36; Karg, 1971: 323;

Bregetova & Shcherbak, 1977b: 272; Evans & Till, 1979: 206; Shcherbak, 1980:
76; Fouly, 1992: 436; Karg, 1993: 336.

Type species: *Rhodacarellus subterraneus* Willmann, 1935, by original designation.

94. *Rhodacarellus apophyseus* Karg, 1971

Rhodacarellus apophyseus Karg, 1971: 324.

Rhodacarellus apophyseus.— Bregetova & Shcherbak, 1977b: 279; Shcherbak, 1980: 86;
Karg, 1993: 339.

TYPE DEPOSITORY: Institut für Pflanzenschutzforschung – Biologische Zentralanstalt
der Deutschen Akademie der Landwirtschaftswissenschaften zu Berlin,
Kleinmachnow, Germany.

TYPE LOCALITY AND HABITAT: Germany, near Halberstadt, Holtemme, 5 September
1963, in prairie a river.

95. *Rhodacarellus arcanus* (Athias-Henriot, 1961)

Rhodacaropsis arcanus Athias-Henriot, 1961: 497.

Rhodacarellus arcanus.— Loots, 1969a: 47; Lee, 1970: 37; Bregetova & Shcherbak, 1977b: 276; Shcherbak, 1980: 91; Shcherbak, 1982: 63.

TYPE DEPOSITORY: Laboratoire d'Acarologie de l'École Pratique des Hautes Études, Paris, France.

TYPE LOCALITY AND HABITAT: Algeria, l'Oued Bouzaréah, 3 January 1961, in soil under *Laurus nobilis* [Lauraceae].

96. *Rhodacarellus citri* Fouly, 1992

Rhodacarellus citri Fouly, 1992: 436.

TYPE DEPOSITORY: Collection of Department of Plant Protection, Faculty of Agriculture, Mansoura University, Mansoura, Egypt.

TYPE LOCALITY AND HABITAT: Egypt, farm of the Faculty of Agriculture, Mansoura University, Mansoura, 1990-91, in 10 cm depth from soil surface under *Citrus* sp. orchards [Rutaceae].

97. *Rhodacarellus corniculatus* Willmann, 1935

Rhodacarellus corniculatus Willmann, 1935: 432.

Rhodacarellus corniculatus.— Athias-Henriot, 1961: 486; Karg, 1961: 128; Lee, 1970: 37;
Bregetova & Shcherbak, 1977b: 280; Shcherbak, 1980: 79; Krantz, 1986: 634;
Karg, 1993: 340.

TYPE DEPOSITORY: Zoologische Staatssammlung München, Munich, Germany.

TYPE LOCALITY AND HABITAT: Germany, Leipzig, in forest soil on the edge of a
stream.

98. *Rhodacarellus epigynialis* Sheals, 1956

Rhodacarellus epigynialis Sheals, 1956: 102.

Rhodacarellus epigynialis.— Sheals, 1958: 302; Athias-Henriot, 1961: 486; Karg, 1961:
128; Lee, 1970: 37; Karg, 1971: 325; Bregetova & Shcherbak, 1977b: 275;
Shcherbak, 1980: 83; Karg, 1993: 336.

TYPE DEPOSITORY: British Museum (Natural History), London, England.

TYPE LOCALITY AND HABITAT: Scotland, Bellahouston Park, Glasgow, June 1951-
October 1952, in soil of old grassland.

99. *Rhodacarellus francescae* Athias-Henriot, 1961

Rhodacarellus francescae Athias-Henriot, 1961: 491.

Rhodacarellus francescae.— Hirschmann, 1962: 50; Lee, 1970: 37; Bregetova & Shcherbak, 1977b: 276; Shcherbak, 1980: 89; Shcherbak, 1982: 63.

TYPE DEPOSITORY: Laboratoire d'Acarologie de l'École Pratique des Hautes Études, Paris, France.

TYPE LOCALITY AND HABITAT: Algeria, l'Oued Bouzaréah, 3 January 1961, in soil under *Laurus nobilis* [Lauraceae].

100. *Rhodacarellus kreuzi* Karg, 1965

Rhodacarellus kreuzi Karg, 1965: 296.

Rhodacarellus kreuzi.— Lee, 1970: 37; Karg, 1971: 326; Shcherbak & Furman, 1975: 50; Bregetova & Shcherbak, 1977b: 280; Shcherbak, 1980: 85; Karg, 1993: 340.

TYPE DEPOSITORY: Institut für Pflanzenschutzforschung – Biologische Zentralanstalt der Deutschen Akademie der Landwirtschaftswissenschaften zu Berlin, Kleinmachnow, Germany.

TYPE LOCALITY AND HABITAT: Germany, near Delitzsch, Lemsel, Leipzig, 1960, in flooded pasture.

101. *Rhodacarellus liuzhiyingi* Ma, 1995

Rhodacarellus liuzhiyingi Ma, 1995: 50.

Rhodacarellus liuzhiyingi.— Ma, 2005: 17.

TYPE DEPOSITORY: National Base of Plague and Brucellosis Control, Baicheng, China.

TYPE LOCALITY AND HABITAT: China, Baicheng, Jilin Province, July-September 1993, under the decomposed bark of poplar [Salicaceae].

NOTE: This species is only provisionally placed in this genus, given the absence of key morphological information about the species in the original description.

102. *Rhodacarellus maxidactylus* Karg, 2000

Rhodacarellus maxidactylus Karg, 2000c: 208.

TYPE DEPOSITORY: Staatliches Museum für Naturkunde Görlitz, Görlitz, Germany.

TYPE LOCALITY AND HABITAT: Costa Rica, 1 November 1993, in soil.

103. *Rhodacarellus moneli* Solomon, 1978

Rhodacarellus moneli Solomon, 1978: 85.

TYPE DEPOSITORY: unknown.

TYPE LOCALITY AND HABITAT: Romania, Voinesti (Iași) forest, Iasi, 1976, in litter of carpineto-fagetum association.

104. *Rhodacarellus montanus* Shcherbak, 1980

Rhodacarellus montanus Shcherbak, 1980: 92.

TYPE DEPOSITORY: Institute of Zoology and Biology of the All-Ukrainian Academy of Sciences (AUAS), Kiev, Ukraine.

TYPE LOCALITY AND HABITAT: Turkmenistan, summit of Mountain Dushak, alt. 2000 m, 17 May 1978, in soil under *Juniperus seravschanica* [Cupressaceae].

105. *Rhodacarellus perspicuus* Halašková, 1959

Rhodacarellus epigynialis perspicuus Halašková, 1959: 98.

Rhodacarellus perspicuus.— Athias-Henriot, 1961: 486; Karg, 1971: 324; Bregetova & Shcherbak, 1977b: 279; Shcherbak, 1980: 84; Karg, 1993: 336.

Rhodacarellus epigynialis perspicuus.— Lee, 1970: 37.

TYPE DEPOSITORY: Unknown.

TYPE LOCALITY AND HABITAT: Czech Republic, Strančice, Říčany, South Prague, 15 January 1956, in soil of a *Picea excelsa vulgaris* [Pinaceae] forest sparsely covered with *Oxalis acetosella* [Oxalidaceae].

106. *Rhodacarellus shandongensis* Ma, 2008

Rhodacarellus shandongensis Ma, 2008: 127.

TYPE DEPOSITORY: Entomology Gallery, Institute of Microbiology and Epidemiology,
Academy of Military Medical Sciences, Beijing, China.

TYPE LOCALITY AND HABITAT: China, Tai'an (36°15'N, 117°08'E), Shandong
Province, 15 July 2000, under bark of tree.

NOTE: This species is only provisionally placed in this genus, given the absence of key
morphological information about the species in the original description.

107. *Rhodacarellus silesiacus* Willmann, 1936

Rhodacarellus silesiacus Willmann, 1936: 282.

Rhodacarellus silesiacus.— Sheals, 1958: 302; Athias-Henriot, 1961: 488; Karg, 1961:
128; Hirschmann, 1962: 49; Emberson, 1968: 160; Lee, 1970: 37; Karg, 1971:
324; Lee, 1973a: 3; Shcherbak & Furman, 1975: 50; Bregetova & Shcherbak,
1977b: 279; Shcherbak, 1980: 80; Krantz, 1986: 634; Farrier & Hennessey, 1993:
132; Karg, 1993: 339; Meng *et al.*, 2007: 242.

TYPE DEPOSITORY: Zoologische Staatssammlung München, Munich, Germany.

TYPE LOCALITY AND HABITAT: Germany, near Hundsfeld, Mähwiese; Germany,
Waldenburg, Bergland; [Poland], Breslau [Wrocław]; in pasture and prairie.

108. *Rhodacarellus subterraneus* Willmann, 1935

Rhodacarellus subterraneus Willmann, 1935: 430.

Rhodacarellus subterraneus [sic].— Schweizer, 1961: 89.

Rhodacarellus subterraneus.— Athias-Henriot, 1961: 488; Karg, 1961: 127; Lee, 1970: 37;

Karg, 1971: 324; Bregetova & Shcherbak, 1977b: 276; Shcherbak, 1980: 78;

Shcherbak, 1982: 63; Farrier & Hennessey, 1993: 132; Karg, 1993: 339.

TYPE DEPOSITORY: Zoologische Staatssammlung München, Munich, Germany.

TYPE LOCALITY AND HABITAT: Germany, Leipzig, Saxony, in forest soil of a riparian zone.

109. *Rhodacarellus tadchikistanicus* Shcherbak, 1980

Rhodacarellus tadchikistanicus Shcherbak, 1980: 87.

TYPE DEPOSITORY: Institute of Zoology and Biology of the All-Ukrainian Academy of Sciences (AUAS), Kiev, Ukraine.

TYPE LOCALITY AND HABITAT: Tajikistan, Ramidskoe Valley, Gissar Range, 23 April 1978, in soil under rock along a stream.

NOTE: Species described based on the stages of protonymph, deutonymph and adult male.

110. *Rhodacarellus tebeenus* Hafez & Nasr, 1979

Rhodacarellus tebeenus Hafez & Nasr, 1979: 78.

Rhodacarellus tebeenus.— Zaher, 1986: 17.

TYPE DEPOSITORY: unknown.

TYPE LOCALITY AND HABITAT: Egypt, El-Tebeen, Helwan, Cairo Governate, in soil
cultivated with banana [Musaceae].

111. *Rhodacarellus unicus* Karg, 2000

Rhodacarellus unicus Karg, 2000a: 251.

TYPE DEPOSITORY: Arachnologische Sammlung des Museums für Naturkunde, Berlin,
Germany.

TYPE LOCALITY AND HABITAT: Cuba, Pinar del Rio, 1976, in soil.

112. *Rhodacarellus vervacti* (Athias-Henriot, 1961)

Rhodacaropsis vervacti Athias-Henriot, 1961: 497.

Rhodacarellus vervacti.— Lee, 1970: 37.

TYPE DEPOSITORY: Laboratoire d'Acarologie de l'École Pratique des Hautes Études,
Paris, France.

TYPE LOCALITY AND HABITAT: Algeria, road to Gué-de-Constantine, Baraki, May-June 1959, in soil under *Scolymus* spp. [Asteraceae].

NOTE: This species was described only from the deutonymph. Lee (1970) placed it in *Rhodacarellus*, apparently based only on the original description.

113. *Rhodacarellus yalujiangensis* Ma, 2003

Rhodacarellus yalujiangensis Ma, 2003: 85.

Rhodacarellus yalujiangensis.— Ma, 2005: 18.

TYPE DEPOSITORY: National Base of Plague and Brucellosis Control, Baicheng, China.

TYPE LOCALITY AND HABITAT: China, Linjiang County, Jilin Province, 2 August 1999, under decomposed bark.

NOTE: This species is only provisionally placed in this genus, given the absence of key morphological information about the species in the original description.

Genus *Rhodacaropsis* Willmann, 1935

Rhodacaropsis Willmann, 1935: 426 (described in Rhodacaridae Oudemans).

Rhodacarus (*Rhodacaropsis*).— Loots, 1969a: 56; Loots, 1969c: 182; Loots, 1979: 2.

Rhodacaropsis.— Lee, 1970: 37; Bregetova & Shcherbak, 1977b: 270; Shcherbak, 1980: 32; Luxton, 1992: 237.

Type species: *Rhodacaropsis inexpectatus* Willmann, 1935, by monotypy.

114. *Rhodacaropsis attenuatus* (Loots, 1969)

Rhodacarus (Rhodacaropsis) attenuatus Loots, 1969a: 56.

Rhodacaropsis attenuatus.— Shcherbak, 1980: 33; Antony, 1986: 151; Luxton, 1992: 241.

Rhodacaropsis attenuata.— Krantz, 1986: 634.

TYPE DEPOSITORY: Museu do Dundo, Dundo, Angola.

TYPE LOCALITY AND HABITAT: South Africa, Blauwberg Beach, Cape Town,
[Western Cape], 1966, in soil in the intertidal zone.

115. *Rhodacaropsis botosaneanui* (Petrova & Beron, 1973)

Rhodacarus (Rhodacaropsis) botosaneanui Petrova & Beron, 1973: 317.

Rhodacaropsis botosaneanui.— Shcherbak, 1980: 33; Krantz, 1986: 634; Luxton, 1992:
241.

TYPE DEPOSITORY: Mite Collection of the Institute of Zoology of the Bulgarian
Academy of Sciences, Sofia, Bulgaria.

TYPE LOCALITY AND HABITAT: Cuba, Baracoa, Guantanamo Province, 4 April 1969,
in sand of track that separates the Rio Miel and Atlantic Ocean.

NOTE: Species described based only on adult males.

116. *Rhodacaropsis cheungae* Luxton, 1992

Rhodacaropsis cheungae Luxton, 1992: 238.

TYPE DEPOSITORY: British Museum (Natural History), London, England.

TYPE LOCALITY AND HABITAT: Hong Kong, Cape d'Aguilar, in beach sand.

117. *Rhodacaropsis cubanus* (Petrova & Beron, 1973)

Rhodacarus (Rhodacaropsis) cubanus Petrova & Beron, 1973: 319.

Rhodacaropsis cubanus.— Shcherbak, 1980: 33; Luxton, 1992: 242; Farrier & Hennessey, 1993: 133.

Rhodacaropsis cubana.— Krantz, 1986: 634.

TYPE DEPOSITORY: Mite Collection of the Institute of Zoology of the Bulgarian Academy of Sciences,, Sofia, Bulgaria.

TYPE LOCALITY AND HABITAT: Cuba, Baracoa, Guantanamo Province, 4 April 1969, in sand of track that separates the Rio Miel and Atlantic Ocean.

118. *Rhodacaropsis inexpectatus* Willmann, 1935

Rhodacaropsis inexpectatus Willmann, 1935: 427.

Rhodacaropsis inexpectatus.— Athias-Henriot, 1961: 491; Emberson, 1968: 157; Lee, 1970: 38; Bregetova & Shcherbak, 1977b: 271; Shcherbak, 1980: 33; Antony, 1986: 151; Krantz & Ainscough, 1990: 618; Luxton, 1992: 242; Karg, 1993: 336; Farrier & Hennessey, 1993: 133.

Rhodacaropsis inexpectata.— Krantz, 1986: 634.

TYPE DEPOSITORY: Zoologische Staatssammlung München, Munich, Germany.

TYPE LOCALITY AND HABITAT: Germany, Kiel Harbour, in coastal groundwater.

119. *Rhodacaropsis ponticus* Shcherbak, 1980

Rhodacaropsis ponticus Shcherbak, 1980: 34.

Rhodacaropsis ponticus.— Karg, 1993: 336.

TYPE DEPOSITORY: Institute of Zoology and Biology of the All-Ukrainian Academy of Sciences (AUAS), Kiev, Ukraine.

TYPE LOCALITY AND HABITAT: Ukraine, Fox Bay, near Kara Dag Mountain, Black Sea littoral, Crimea, in sand (depth 2-13 cm), 7 metres from the water edge.

Genus *Rhodacarus* Oudemans, 1902

Rhodacarus Oudemans, 1902: 5 (described in Parasitidae Oudemans).

Rhodacarus.— Evans, 1957: 221; Sheals, 1958: 298; Ryke, 1962c: 81; Loots, 1969a: 49:

Loots, 1969c: 182; Loots, 1979: 2; Lee, 1970: 26; Bregetova & Shcherbak, 1977b: 259; Shcherbak, 1980: 39.

Rhodacarus (Rhodacarus).— Shcherbak, 1980: 42.

Type species: *Rhodacarus roseus* Oudemans, 1902, by monotypy.

120. *Rhodacarus aequalis* Karg, 1971

Rhodacarus aequalis Karg, 1971: 322.

Rhodacarus aequalis.— Bregetova & Shcherbak, 1977b: 267; Karg, 1993: 335; Kalúz, 1994: 675.

Rhodacarus (Rhodacarus) aequalis.— Shcherbak, 1980: 71.

TYPE DEPOSITORY: Institut für Pflanzenschutzforschung – Biologische Zentralanstalt der Deutschen Akademie der Landwirtschaftswissenschaften zu Berlin, Kleinmachnow, Germany.

TYPE LOCALITY AND HABITAT: Germany, Krägenriss, near Wörlitz, 13 April 1967, in humus.

121. *Rhodacarus agrestis* Karg, 1971

Rhodacarus agrestis Karg, 1971: 322.

Rhodacarus agrestis.— Bregetova & Shcherbak, 1977b: 269; Karg, 1993: 335; Kalúz, 1994: 675.

Rhodacarus (Rhodacarus) agrestis.— Shcherbak, 1980: 70.

TYPE DEPOSITORY: Institut für Pflanzenschutzforschung – Biologische Zentralanstalt der Deutschen Akademie der Landwirtschaftswissenschaften zu Berlin, Kleinmachnow, Germany.

TYPE LOCALITY AND HABITAT: Germany, Harz, Halberstadt, 11 October 1967, in cultivated soil.

122. *Rhodacarus angustiformis* Willmann, 1951

Rhodacarus angustiformis Willmann, 1951: 119.

Rhodacarus angustiformis.— Athias-Henriot, 1961: 498; Lee, 1970: 29; Karg, 1971: 318; Karg, 1993: 331.

Rhodacarus angustiformes [sic].— Bregetova & Shcherbak, 1977b: 269; Shcherbak, 1980: 42.

TYPE DEPOSITORY: Zoologische Staatssammlung München, Munich, Germany.

TYPE LOCALITY AND HABITAT: Austria, Leitha, Purbach am Neusiedlersee, Burgenland, in litter.

123. *Rhodacarus berrisfordi* Loots, 1969

Rhodacarus (Rhodacarus) berrisfordi Loots, 1969a: 50.

Rhodacarus berisfordi [sic].— Shcherbak, 1980: 202.

Rhodacarus berrisfordi.— Antony, 1986: 149.

Rhodacarus berresfordi [sic].— Krantz, 1986: 634.

TYPE DEPOSITORY: Museu do Dundo, Dundo, Angola.

TYPE LOCALITY AND HABITAT: South Africa, Durban Beach, Durban, [Kwazulu-Natal], 1966, in soil in the upper intertidal zone.

124. *Rhodacarus calcarulatus* Berlese, 1920

Rhodacarus calcarulatus Berlese, 1920: 164.

Rhodacarus pallidus f. *calcarulatus*.— Sheals, 1958: 299.

Rhodacarus calcarulatus.— Lee, 1970: 29; Bregetova & Shcherbak, 1977b: 269;

Castagnoli & Pegazzano, 1985: 57; Karg, 1993: 335; Kalúz, 1994: 675.

Rhodacarus (Rhodacarus) calcarulatus.— Shcherbak, 1980: 67.

Rhodacarus elbius Karg, 1971: 322 (synonymy by Bregetova & Shcherbak, 1977b: 269).

TYPE DEPOSITORY of *R. calcarulatus*: Istituto Sperimentale per la Zoologia Agraria, Florence, Italy; of *R. elbius*: Institut für Pflanzenschutzforschung – Biologische Zentralanstalt der Deutschen Akademie der Landwirtschaftswissenschaften zu Berlin, Kleinmachnow, Germany.

TYPE LOCALITY AND HABITAT of *R. calcarulatus*: Italy, Portici, Napoli, in moss; of

R. elbius: Germany, margin of Elbe River, Vockerode, [Wittenberg], 1967, in humus.

NOTE¹: Sheals (1958) considered *R. calcarulatus* to be a junior synonym of *Rhodacarus pallidus* Hull, naming it *Rhodacarus pallidus* f. *calcarulatus*. In the same publication, he mentioned that *T. pallidus* had a V-shaped groove posterior to setae *j*₄, *z*₃ and *s*₂, and that *R. pallidus* f. *calcarulatus* did not have it. Thus, we understand that those species should not be considered synonyms.

NOTE²: *Rhodacarus calcarulatus* Berlese *sensu* Athias-Henriot (1961) and Karg (1971) were misidentifications of *R. reconditus* Athias-Henriot, 1961 (see below). The two species may be distinguished by the V-shaped groove in the podonotal shield - absent in *R. calcarulatus*, present in *R. reconditus*.

125. *Rhodacarus clavulatus* Athias-Henriot, 1961

Rhodacarus clavulatus Athias-Henriot, 1961: 502.

Rhodacarus clavulatus.— Lee, 1970: 29; Guevara-Benitez, 1974: 210; Karg, 1993: 334.

Rhodacarus (Rhodacarus) clavulatus.— Shcherbak, 1980: 47.

Rhodacarus ancorae Karg, 1971: 320 (synonymy by Shcherbak, 1980: 47).

TYPE DEPOSITORY of *R. clavulatus*: Laboratoire d'Acarologie de l'École Pratique des Hautes Études, Paris, France; of *R. ancorae*: Institut für Pflanzenschutzforschung

– Biologische Zentralanstalt der Deutschen Akademie der
Landwirtschaftswissenschaften zu Berlin, Kleinmachnow, Germany.

TYPE LOCALITY AND HABITAT of *R. clavulatus*: Algeria, Bouzareah valley, 3 January
1961, in soil and litter under *Laurus nobilis* [Lauraceae]; of *R. ancorae*: Germany,
Kemnitztal, near Oelsnitz, 26 September 1967, in moss.

126. *Rhodacarus coronatus* Berlese, 1920

Rhodacarus coronatus Berlese, 1920: 165.

Rhodacarus (?) *coronatus*.— Athias-Henriot, 1961: 502.

Rhodacarus coronatus.— Lee, 1970: 29; Karg, 1971: 321; Bregetova & Shcherbak, 1977b:
261; Shcherbak, 1977: 76; Castagnoli & Pegazzano, 1985: 91; Karg, 1993: 333.

Rhodacarus (*Rhodacarus*) *coronatus*.— Shcherbak, 1980: 50.

Rhodacarus (?) *coronatus* forma *simplex* Athias-Henriot, 1961: 502 (unavailable
infrasubspecific name, *International Code of Zoological Nomenclature*, Articles
15.2 and 45.6.3).

TYPE DEPOSITORY: Istituto Sperimentale per la Zoologia Agraria, Florence, Italy.

TYPE LOCALITY AND HABITAT: Italy, Firenze, Boboli and Vallombrosa, in moss.

NOTE: Athias-Henriot (1961) provisionally identified specimens from Italy as *Rhodacarus*
(?) *coronatus*, and from Algeria as *Rhodacarus* (?) *coronatus* forma *simplex*. This
ambiguity suggests that the name *Rhodacarus coronatus* conceals more than one

species, and all identifications under this name must be considered as unconfirmed.

127. *Rhodacarus cuneatus* Athias-Henriot, 1961

Rhodacarus cuneatus Athias-Henriot, 1961: 499.

Rhodacarus cuneatus.— Lee, 1970: 29; Karg, 1971: 321; Bregetova & Shcherbak, 1977b: 264; Karg, 1993: 332.

Rhodacarus (Rhodacarus) cuneatus.— Shcherbak, 1980: 57.

TYPE DEPOSITORY: Laboratoire d'Acarologie de l'École Pratique des Hautes Études, Paris, France.

TYPE LOCALITY AND HABITAT: Algeria, Bouzaréah, January-March 1958, in litter.

128. *Rhodacarus fatrensis* Kalúz, 1994

Rhodacarus fatrensis Kalúz, 1994: 675.

TYPE DEPOSITORY: Slovak National Museum, Bratislava, Slovakia.

TYPE LOCALITY AND HABITAT: Slovakia, State Nature Reserve Šrámková, National Park Malá Fatra mountains, 2 June 1982, on unspecified substrate.

129. *Rhodacarus furmanae* Shcherbak, 1975

Rhodacarus furmanae Shcherbak, in Shcherbak & Furman, 1975: 50.

Rhodacarus furmanae.— Bregetova & Shcherbak, 1977b: 264; Karg, 1993: 332.

Rhodacarus (Rhodacarus) furmanae.— Shcherbak, 1980: 61.

TYPE DEPOSITORY: Institute of Zoology and Biology of the All-Ukrainian Academy of Sciences (AUAS), Kiev, Ukraine.

TYPE LOCALITY AND HABITAT: Ukraine, Velikomikhaylovskiy District, Odessa Region, 4 September 1965, in soil.

130. *Rhodacarus gracilis* Shcherbak, 1980

Rhodacarus (Rhodacarus) gracilis Shcherbak, 1980: 67.

TYPE DEPOSITORY: Institute of Zoology and Biology of the All-Ukrainian Academy of Sciences (AUAS), Kiev, Ukraine.

TYPE LOCALITY AND HABITAT: Turkmenistan, summit of Mountain Dushak (alt. 2000 m), 17 May 1978, in soil with roots of *Juniperus* sp. [Cupressaceae].

131. *Rhodacarus haarlovi* Shcherbak, 1977

Rhodacarus haarlovi Shcherbak, 1977: 79.

Rhodacarus (Rhodacarus) haarlovi.— Shcherbak, 1980: 53.

Rhodacarus haarlovi.— Karg, 1993: 333.

Rhodacarus roseus.— Haarlov, 1957: 19 (misidentification, according to Shcherbak, 1977: 79).

TYPE DEPOSITORY: Institute of Zoology and Biology of the All-Ukrainian Academy of Sciences (AUAS), Kiev, Ukraine.

TYPE LOCALITY AND HABITAT: Lithuania, Klaipeda County, 25 September 1964, soil in sugar beet field [Chenopodiaceae].

132. *Rhodacarus laureti* Athias-Henriot, 1961

Rhodacarus laureti Athias-Henriot, 1961: 501.

Rhodacarus laureti.— Lee, 1970: 29; Karg, 1993: 335.

Rhodacarus (Rhodacarus) laureti.— Shcherbak, 1980: 46.

TYPE DEPOSITORY: Laboratoire d'Acarologie de l'École Pratique des Hautes Études, Paris, France.

TYPE LOCALITY AND HABITAT: Algeria, l'Oued Bouzaréah valley, 3 January 1961, in soil under *Laurus nobilis* [Lauraceae].

NOTE: Bregetova & Shcherbak (1977): 269 suggested that *R. roseus* sensu Sheals (1958) could be a misidentification of *R. laureti*.

133. *Rhodacarus longisetosus* Shcherbak, 1980

Rhodacarus (Rhodacarus) furmanae longisetosus Shcherbak, 1980: 64.

Rhodacarus longisetosus.— Karg, 1993: 332.

TYPE DEPOSITORY: Institute of Zoology and Biology of the All-Ukrainian Academy of Sciences (AUAS), Kiev, Ukraine.

TYPE LOCALITY AND HABITAT: Ukraine, Alushta, Crimea, 16 November 1960, in soil under stone.

134. *Rhodacarus mandibularis* Berlese, 1920

Rhodacarus mandibularis Berlese, 1920: 165.

Rhodacarus mandibularis.— Lee, 1970: 29; Bregetova & Shcherbak, 1977b: 261; Shcherbak, 1977: 74; Castagnoli & Pegazzano, 1985: 239; Karg, 1993: 333.

Rhodacarus (Rhodacarus) mandibularis.— Shcherbak, 1980: 48.

TYPE DEPOSITORY: Istituto Sperimentale per la Zoologia Agraria, Florence, Italy.

TYPE LOCALITY AND HABITAT: Italy, Florence and Udine, in moss and humus.

NOTE: Sheals (1958) considered this species to be a junior synonym of *R. roseus*.

However, in subsequent publications they were always considered different species, with what we agree when considering the redescriptions of *R. roseus* by Lee (1970) and of *R. mandibularis* by Shcherbak (1980).

135. *Rhodacarus mandibularosimilis* Shcherbak & Kadite, 1979

Rhodacarus mandibularosimilis Shcherbak & Kadite, 1979: 84.

Rhodacarus (Rhodacarus) mandibularosimilis.— Shcherbak, 1980: 55.

Rhodacarus mandibularosimilis.— Karg, 1993: 333.

TYPE DEPOSITORY: Institute of Zoology and Biology of the All-Ukrainian Academy of Sciences (AUAS), Kiev, Ukraine.

TYPE LOCALITY AND HABITAT: Ukraine, Lyutezh, Kiev Region, in soil (0-5 cm) of mixed forest.

136. *Rhodacarus marksae* Domrow, 1957

Rhodacarus marksae Domrow, 1957: 200.

Rhodacarus marksae.— Lee, 1970: 29.

TYPE DEPOSITORY: Queensland Museum, Brisbane, Australia.

TYPE LOCALITY AND HABITAT: Australia, Low Isles [Great Barrier Reef, Queensland], Green Ant Island, 24 August 1954, on leaf mould.

137. *Rhodacarus matatlanticae* Castilho & Moraes, 2010

Rhodacarus matatlanticae Castilho & Moraes, 2010: 394.

TYPE DEPOSITORY: Departamento de Entomologia e Acarologia, Escola Superior de Agricultura “Luiz de Queiroz”, Universidade de São Paulo, Piracicaba, State of São Paulo, Brazil.

TYPE LOCALITY AND HABITAT: Brazil, Cananéia, São Paulo, 12 July 2000, in soil under *Bactris setosa* [Arecaceae].

138. *Rhodacarus olgae* Shcherbak, 1975

Rhodacarus olgae Shcherbak, in Shcherbak & Furman, 1975: 47.

Rhodacarus olgae.— Bregetova & Shcherbak, 1977b: 264; Karg, 1993: 332.

Rhodacarus (Rhodacarus) olgae.— Shcherbak, 1980: 59; Shcherbak, 1982: 63.

TYPE DEPOSITORY: Institute of Zoology and Biology of the All-Ukrainian Academy of Sciences (AUAS), Kiev, Ukraine.

TYPE LOCALITY AND HABITAT: Ukraine, Shelekhovo, Ananievskiy District, Odessa Region, 19 September 1965, in forest soil (depth of 10-20 cm).

139. *Rhodacarus pallidus* Hull, 1918

Rhodacarus pallidus Hull, 1918: 57.

Rhodacarus roseus var. *pallidus*.— Halbert, 1920: 115.

Rhodacarus pallidus f. *typica* Sheals, 1958: 299.

Rhodacarus (?) *pallidus*.— Athias-Henriot, 1961: 501.

Rhodacarus pallidus.— Lee, 1970: 29; Bregetova & Shcherbak, 1977b: 267; Krantz, 1986: 634; Karg, 1993: 334; Farrier & Hennessey, 1993: 133.

Rhodacarus (*Rhodacarus*) *pallidus*.— Shcherbak, 1980: 44.

TYPE DEPOSITORY: British Museum (Natural History) London, England.

TYPE LOCALITY AND HABITAT: England, Allendale (cited as West Allendale),

Tynedale, [Northumberland], under deeply embedded stones with *Pergamasus hamatus* [Acari: Parasitidae].

NOTE¹: Sheals (1958) considered *R. calcarulatus* to be a junior synonym of *Rhodacarus pallidus* Hull, naming it *Rhodacarus pallidus* f. *calcarulatus*. In the same publication, he mentioned that *T. pallidus* had a V-shaped groove posterior to setae *j*₄, *z*₃ and *s*₂, and that *R. pallidus* f. *calcarulatus* did not have it. Thus, we understand that those species should not be considered synonyms.

NOTE²: Krantz (1986) drew attention to possible misidentifications of this species, and ambiguity over its doubtful synonymy with *R. calcarulatus*, as suggested by Sheals (1958).

140. *Rhodacarus reconditus* Athias-Henriot, 1961

Rhodacarus reconditus Athias-Henriot, 1961: 503.

Rhodacarus reconditus.— Lee, 1970: 29; Bregetova & Shcherbak, 1977b: 261; Karg, 1993: 333.

Rhodacarus (Rhodacarus) reconditus.— Shcherbak, 1980: 57.

Rhodacarus calcarulatus.— Athias-Henriot, 1961: 501; Karg, 1971: 321

(misidentification).

TYPE DEPOSITORY: Laboratoire d'Acarologie de l'École Pratique des Hautes Études,
Paris, France.

TYPE LOCALITY AND HABITAT: Spain, Isla Cies Norte, 26 July 1955, under cut *Ulex
europaeus* [Fabaceae].

141. *Rhodacarus rhodacaropsis* Ryke, 1962

Rhodacarus rhodacaropsis Ryke, 1962c: 83.

Rhodacarus (Rhodacarus) rhodacaropsis.— Loots, 1969a: 50.

Rhodacarus rhodacaropsis.— Lee, 1970: 29.

TYPE DEPOSITORY: Institute for Zoological Research of the Potchefstroom University,
Potchefstroom, South Africa.

TYPE LOCALITY AND HABITAT: South Africa, Potchefstroom, March 1960, in humus
under trees on river bank.

NOTE: This species is only provisionally placed in this genus.

142. *Rhodacarus roseus* Oudemans, 1902

Rhodacarus roseus Oudemans, 1902: 50.

Genus and species unknown, number 81.— Oudemans, 1896: 136.

Rhodacarus roseus f. *typica* Sheals, 1958: 299.

Rhodacarus roseus.— Athias-Henriot, 1961: 498; Hirschmann, 1962: 49; Lee, 1970: 29; Karg, 1971: 322; Lee, 1973a: 2; Lee, 1973b: 141; Bregetova & Shcherbak, 1977b: 267; Evans & Till, 1979: 206; Zaher, 1986: 16; Krantz, 1986: 634; Fouly & Nawar, 1990: 336; Krantz & Ainscough, 1990: 618; Farrier & Hennessey, 1993: 133; Karg, 1993: 334.

Rhodacarus (Rhodacarus) roseus.— Shcherbak, 1980: 43.

TYPE DEPOSITORY: National Museum of Natural History – Naturalis, Leiden, Netherlands.

TYPE LOCALITY AND HABITAT: Netherlands, Haarlem, on decaying leaves.

NOTE¹: Sheals (1958) recognised two forms of *Rhodacarus roseus* - *R. roseus* f. *typica*, with a V-shaped groove on the podonotal shield, and *R. roseus* f. *simplex*, without a groove. Sheals' *R. roseus* f. *typica* appears to match *R. roseus*, but his *R. roseus* f. *simplex* remains unidentified. Schweizer (1961) illustrated *R. roseus* without a podonotal groove, so the identity of those specimens must also be considered as doubtful. The name *Rhodacarus roseus* has been used in a large number of publications reporting faunistic and ecological studies of soil arthropods (e.g. Block, 1966; Costa, 1966; Lee, 1973b; Sardar & Murphy, 1987). In view of the difficulty of identifying *R. roseus* and related species, it seems likely that this name has been applied to a number of different species. Bregetova & Shcherbak

(1977) suggested that *R. roseus* sensu Sheals (1958) could be a misidentification of *R. laureti*.

NOTE²: Sheals (1958) considered this species to be the senior synonym of *R. mandibularis*.

However, in subsequent publications they were always considered different species, with what we agree when considering the redescriptions of *R. roseus* by Lee (1970) and of *R. mandibularis* by Shcherbak (1980).

143. *Rhodacarus salarius* Karg, 1993

Rhodacarus salarius Karg, 1993: 334.

TYPE DEPOSITORY: Arachnologische Sammlung des Museums für Naturkunde, Berlin, Germany.

TYPE LOCALITY AND HABITAT: Germany, Simonsberg, near Husum, [Nordfriesland, Schleswig-Holstein], 7 December 1987, in salt marshes on the North Sea coast, 4-8 cm deep.

144. *Rhodacarus solimani* Fouly & Nawar, 1990

Rhodacarus solimani Fouly & Nawar, 1990: 337.

TYPE DEPOSITORY: Agricultural Zoology Department, Faculty of Agriculture, Cairo University, Giza, Egypt.

TYPE LOCALITY AND HABITAT: Egypt, farm of the Faculty of Agriculture, Cairo University, Giza, in debris under pear trees [Rosaceae].

145. *Rhodacarus strenzkei* Willmann, 1957

Rhodacarus strenzkei Willmann, 1957: 166.

Rhodacarus strenzkei.— Athias-Henriot, 1961: 498; Karg, 1971: 322; Bregetova & Shcherbak, 1977b: 265; Krantz, 1986: 634; Karg, 1993: 332.

Rhodacarus stenzkei [sic].— Lee, 1970: 29.

Rhodacarus (Rhodacarus) strenzkei.— Shcherbak, 1980: 56.

TYPE DEPOSITORY: Zoologische Staatssammlung München, Munich, Germany.

TYPE LOCALITY AND HABITAT: Germany, margin of Eider River, Kiel, in soil.

NOTE: Lombardini (1962) described a small variety of this species from Italy, as

"*Rhodacarus strenzkei* Willmann var. *strictior* n. var.". The name *strictior* is not available from this source, because it is infrasubspecific (*International Code of Zoological Nomenclature*, ArticleS 15.2 and 45.6.3). It has not been used by later authors, so it remains unavailable.

146. *Rhodacarus tribaculatus* Athias-Henriot, 1961

Rhodacarus tribaculatus Athias-Henriot, 1961: 501.

Rhodacarus tribaculatus.— Lee, 1970: 29; Bregetova & Shcherbak, 1977b: 269; Karg, 1993: 335; Kalúz, 1994: 675.

Rhodacarus (Rhodacarus) tribaculatus.— Shcherbak, 1980: 68.

TYPE DEPOSITORY: Laboratoire d'Acarologie de l'École Pratique des Hautes Études, Paris, France.

TYPE LOCALITY AND HABITAT: France, Port Provençal, Ajaccio, Corsica, April 1957, in litter of *Cistus* sp. (Cistaceae).

147. *Rhodacarus willmanni* Karg, 1993

Rhodacarus willmanni Karg, 1993: 333.

Rhodacarus pallidus.— Willmann, 1935: 422; Karg, 1971: 320 (misidentification).

Rhodacarus roseus var. *pallidus*.— Willmann, 1935: 422 (misidentification).

TYPE DEPOSITORY: Zoologische Staatssammlung München, Munich, Germany.

TYPE LOCALITY AND HABITAT: Germany, Kiel Harbour, in coastal groundwater.

NOTE: This species was described on the basis of the specimens previously identified by Willmann (1935): 422 as *Rhodacarus pallidus* Hull.

148. *Rhodacarus zaheri* Fouly & Nawar, 1990

Rhodacarus zaheri Fouly & Nawar, 1990: 336.

TYPE DEPOSITORY: Agricultural Zoology Department, Faculty of Agriculture, Cairo University, Giza, Egypt.

TYPE LOCALITY AND HABITAT: Egypt, farm of the Faculty of Agriculture, Cairo University, Giza, in debris under pear trees [Rosaceae].

Discussion

We have attempted to compile a complete list of all species of the Rhodacaridae, and to place them in a coherent generic classification. We may have missed some species that are presently placed in other families and should be transferred to the Rhodacaridae, or were published in papers that we have overlooked. However, we believe that the present catalogue will provide a useful foundation for future taxonomic research, and will help in the identification of the Rhodacaridae that are frequently collected in ecological and faunistic studies of the soil fauna.

This compilation draws attention to some areas where detailed research will be necessary to resolve taxonomic problems. Taxonomic confusion surrounds some groups of species, especially in the genus *Rhodacarus*. It appears that *Rhodacarus calcarulatus*, *R. coronatus*, *R. pallidus*, *R. reconditus* and *R. roseus* have often been misidentified, and all of these species are in need of detailed revision. It is very likely that some published records of *R. roseus* actually refer to other species, given the several citations of this species in different continents despite the insufficient information available about the morphology of this species (Lee, 1973b). Bregetova & Shcherbak (1977) drew attention to the very subtle

differences that separate some species, including *R. clavulatus*, *R. ancorae*, *R. pallidus*, and *R. laureti*, and their possible misidentification.

Most species of *Rhodacarus* have a transverse V-shaped groove across the podonotal shield (e.g. *R. roseus*, *R. pallidus*) while others do not (e.g. *R. calcarulatus*, *R. tribaculatus*). Bregetova & Shcherbak (1977) used this character in their key to species, and Kalúz (1994) recognised the *roseus*-group, with a podonotal groove, and the *calcarulatus*-group, without a groove. It is not clear whether this character has any real taxonomic value, and if so, at what level.

Rhodacarellus liuzhiyingi and *Rhodacarellus yalujiangensis* are the only rhodacarid species with peritreme extending anteriorly to the median region of coxa I; in other species, it reaches at most the median region of coxa II. The median notch at the anterior margin of the opisthonotal shield, the longer Z5 and S5 in relation to other opisthonotal setae, the paired lightly sclerotised and punctate anterior areas of the sternal shield and the elongate and medially constricted ventrianal shield suggest these species to belong to *Dendrolaelaps* (Digamasellidae). Conclusive placement of these species requires the determination of the number of tines of the palp tarsal claw and the number of setae of genu and tibia IV, not described in the original descriptions of the species. *Rhodacarellus shandongensis* shares most of those characteristics, except that the peritreme is longer, reaching the median region of coxa III; also for this species, characteristics of the palp tarsal claw and setal counts are not known. This species could also belong to *Dendrolaelaps*.

There are many published records of rhodacarids identified only to the genus level, including, among others, *Rhodacarellus* sp., *Rhodacaroides* sp., and *Rhodacarus* sp., in

records compiled by Farrier & Hennessey (1993), and *Rhodacaroides* new species from Australia (Heatwole *et al.* 1981). A future taxonomic revision of the family should include identification of these taxa. We have also commented on some cases of possible synonymy that have not been resolved, and on some species for which the adult female is not yet known. There are some questions about the familial placement of some genera, especially *Paragamasellevans* and *Tangaroellus*, and these would benefit from further study. A convincing phylogenetically-based classification of the Rhodacaroidea will only be possible when all the species listed here have been re-examined in more detail than they have in the past.

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