Boll. Zool. agr. Bachic.
Ser. II, 34 (2): 213-218

30 August 2002

F. KOZÁR, Z. KONCZNÉ BENEDICTY

Description of the *Marottarhizoecus issisi* gen. et sp. nova (Homoptera, Coccoidea, Pseudococcidae, Rhizoecinae) from Africa with a review and key of the subfamily

Abstract - A new genus and species, *Marottarhizoecus issisi* gen. et sp. nova, is described from Rhizoecinae subfamily. A review and a key for genera is given for the subfamily.

Riassunto - *Descrizione di* Marottarhizoecus issisi *gen. e specie nuova (Homoptera, Coccoidea, Pseudococcidae, Rhizoecinae) dall'Africa con revisione e chiave della sottofamiglia*

Viene descritta *Marottarhizoecus issisi* gen. e sp. nuova appartenente alla sottofamiglia Rhizoecinae. Viene inoltre effettuata la revisione dei generi e fornita una chiave della sottofamiglia.

Key words: Homoptera, Coccoidea, Pseudococcidae, Rhizoecinae *Marottarhizoecus issisi* gen. and sp. nova, Africa, Tanzania, review, key.

The Rhizoecinae is a well separated subfamily of the Pseudococcidae. The members of the subfamily were studied widely by Hambleton (1946, 1976). The subfamily was studied in detail by Tang (1992), Williams & Granara Willink (1992), Williams (1998), and Ben Dov (1994), and others. The computer database Scalenet (the Pseudococcidae family last updated in 26 May 2001) (Miller, Ben Dov & Gimpel, 2001) contains the most important information (taxonomy, distribution, biology, etc). The World fauna of the subfamily not well explored. The distribution of the known species not well known, also. Several species are important pest of different crops and ornamentals, and are spreading in some regions, and need further study.

The aim of present work is to start the study of the subfamily Rhizoecinae in a world-wide scale, to prepare a revision and to learn more about the distribution pattern of the species. In this project several new species were found, which need further study. Below we describe a new genus, and species of this subfamily.

MATERIALS AND METHODS

This study presents the results of the analyses of about 5000 samples from many parts of the World. The descriptions follow the terminology of morphological characters as given in the works of Hambleton (1946, 1976), and Williams (1998).The insects were collected by visual survey from soil, from Berlese funnel and shifting samples (Kozár & Miller, 2000). The collectors are mentioned in the descriptions. Most of the insects are from the scale insect collection of the Plant Protection Institute, Hungarian Academy of Sciences (PPI), Budapest, and from the collection of Arachnida of the Hungarian Natural History Museum, Budapest, Hungary (HNHM).

The insects including some larval stages are preserved on microscopic slides in the PPI.

RESULTS

In the studied samples 530 female and 139 larval stages were found belonging to the Rhizoecinae subfamily. According to a preliminary analysis the slides contain several new species for the science. Among them one belongs to a new genus described below. A key for the genera of tribe Rhizoecini is also given.

Genus: *MAROTTARHIZOECUS* gen. n.

Type species: ***Marottarhizoecus issisi*** sp. n.

Description: Body elongate oval. Antennae 5 segmented typical for the tribe. Legs well developed. Dorsum and venter with a tritubular cerores surrounded by multilocular pores. Tubular ducts absent. Anal ring normal, with 6 setae. Ostioles present, circulus absent.

The new genus named after our friend Dr. Salvatore Marotta, the talented, young Italian coccidologist, who suddenly passed away in December 18, 2001.

Comments: This genus is distinct from other genera, especially by the special groups of multilocular pores surrounding the tritubular cerores.

Marottarhizoecus issisi sp. n. (Fig. 1)

Type material: The holotype, female (on the left side of the slide, marked), (leg. S. Mahunka and A. Zicsi, No. 527 from the collection of S. Mahunka), Mikumi Nat. park (East boundary of the park), Morongoro region, Tanzania, 04. 02. 1987. Paratype on the same slide as holotype, with the same data of collection. Deposited in the Collec-

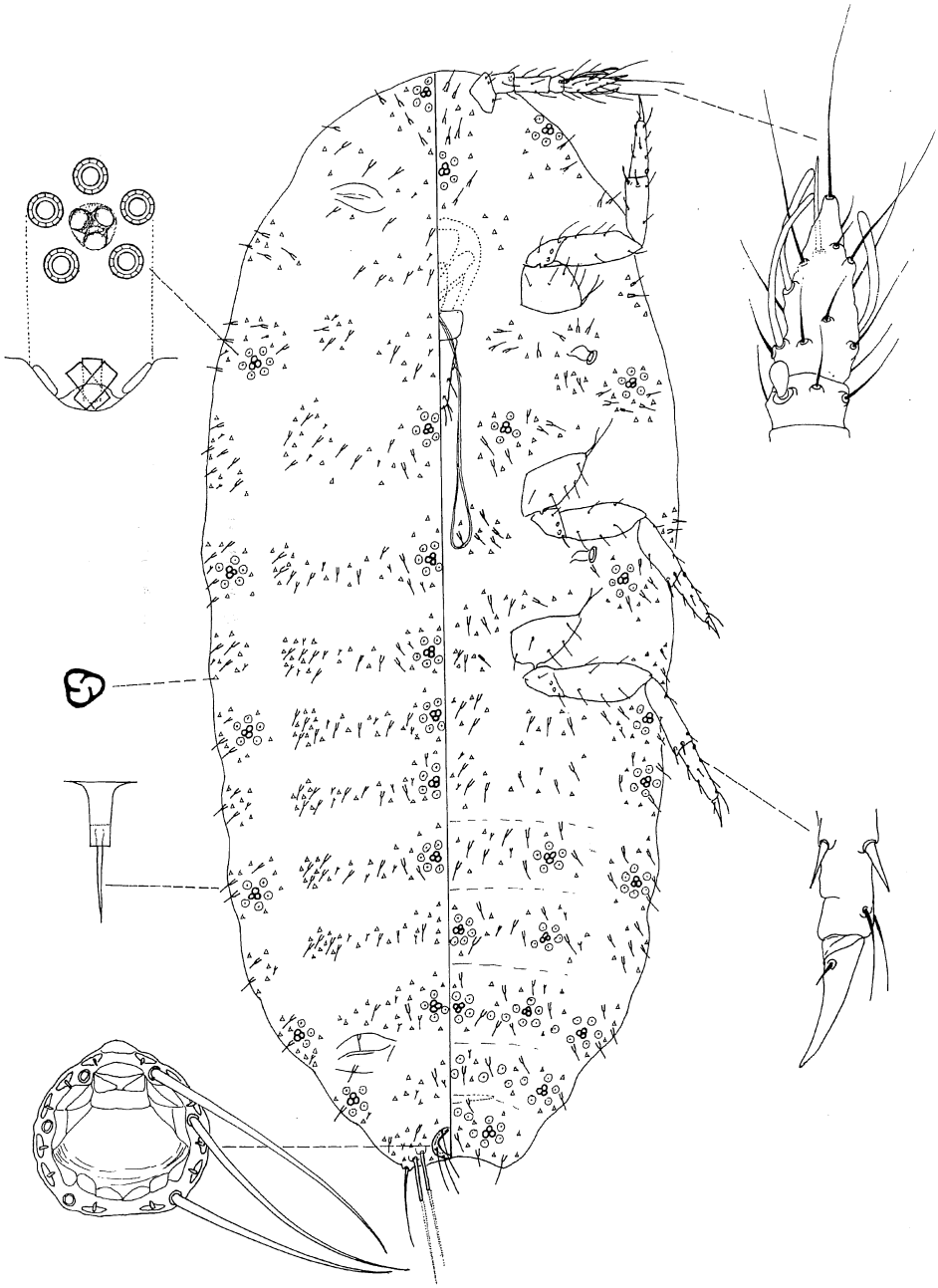

Fig. 1 - *Marottarhizoecus issisi* genus and species nova, adult female.

tion of Plant Protection Institute, Hungarian Academy of Sciences (Budapest, Hungary).

Description: Body elongate oval. Mounted specimen (Fig. 1) 0.72-0.77 mm long and 0.42-0.43 mm wide. Antenna 5 segmented, the size of the segments: 1st – 28-29 μm, 2nd - 29 μm, 3rd – 34, fourth –10-12 μm, fifth – 43-46. There is one sensory pore on the 2nd segment of the antenna. The 3rd segment is almost parallel sided. Apical seta of antenna 48-50 μm. On apical segment three to four 29-38 μm long sensory falcate setaa are situated. On the penultimate segment one short, 10 μm long, blunted sensory seta present. The segments of the antenna are covered with few hairlike setae. Eye not visible. Anal lobe slightly developed with three hairlike setae, two of them broken, one present, 46 μm long.

VENTER

Labium two-segmented, 70-77 μm long. Stylet loop 2-3 times longer than labium. Cephalic plate absent. Legs robust: coxa of anterior legs 31-41 μm, trochanter-femur 96 μm, tibia 41-46, tarsus 41-43 μm, and claw 19-22 μm. Coxa of middle legs 34-41 μm, trochanter-femur 101-106 μm, tibia 46, tarsus 41-44 μm, and claw 22 μm long. Coxa of posterior legs 38-43 μm, trochanter-femur 118-120 μm, tibia 48-55 and tarsus 48 μm, and claw 24 μm, tarsal digitules 17 μm long, claw digitules hardly visible, 4 μm long. Trochanter with two pores on each side. Claw without denticle. Legs with few hairlike setae, tibia and tarsus with 10 μm long spinelike setae, and with one sensory pore on tibia. On the ventral segments 1-5 groups of tritubular cerores surrounded by 4-6 multilocular pores, 5 μm in diameter. Multilocular pores with 12 loculi. The groups are situated in a dermal depression. The diameter of anterior spiracles 12 μm. Venter with a small number of scattered 3-22 μm long, special hairlike setae situated on socketlike bases, which are almost half as long as the setae. The last three segments of the abdomen with some scattered multilocular pores (12-14-locular pores). Circulus absent. Tubular duct absent. Trilocular pores scattered on the venter.

DORSUM

Ostioles present, not sclerotized. With a marginal and middorsal row of multilocular pore groups. Multilocular pores with 12 loculi. Anal ring oval, 29 μm wide and 33 μm long. Anal rings destroyed. Anal ring with six, 58-60 μm long hairlike setae. Anal ring pores (cells) typical, as in other species of the Rhizoecini, with one blunted spicules. Tubular duct absent. Hairlike setae and trilocular pores (2 μm wide) scattered on the dorsum.

The species is named according to the abbreviation ISSIS (International Symposium of Scale Insect Studies) series regularly organised by Coccidologists starting from 1972 (in organisation two of these Symposiums - Portici, 1986, and Padova, 2001 - Dr. Salvatore Marotta participated substantially, too).

Affinities: *Marottarhizoecus issisi* similar to *R. ornatus*, but differs by presence of multilocular pores instead of trilocular pores in the pore groups.

REVIEW OF THE RHIZOECINAE SUBFAMILY, WITH AN IDENTIFICATION KEY OF GENERA BELONGING TO TRIBE RHIZOECINI

The Rhizoecinae Williams, 1968 (161 species) subfamily contains two tribes: Rhizoecini Williams, 1968, and Xenococcini Tang, 1992.

The Xenociccini tribe (24 species) covers the next genera: *Eumyrmococcus* Silvestri, 1926 (18 species). Type species: *Eumyrmococcus smithii* Silvestri, 1926, by monotypy and original designation. *Xenococcus* Silvestri, 1924 (2 species). Type species: *Xenococcus annandalei* Silvestri, 1924, by monotypy and original designation. *Neochavesia* Williams & Granara de Willink, 1992 (4 species). Type species: *Chavesia caldasiae* Balachowsky, 1957, by original designation.

The Rhizoecini tribus (137 species) covers the next genera: *Rhizoecus* Kunckel d'Herculais, 1878 (79 species). Type species: *Rhizoecus falcifer* Kunckel d'Herculais, 1878, by monotypy. *Ripersiella* Tinsley, 1899 (45 species). Type species: *Ripersia rumicis* Maskell, 1892. *Capitisetella* Hambleton, 1977 (1 species). Type species: *Pseudorhizoecus migrans* Green, 1933, by monotypy and original designation. *Pseudorhizoecus* Green, 1933 (1 species). Type species: *Pseudorhizoecus proximus* Green, 1933, by original designation. *Pygmaeococcus* McKenzie, 1960 (1 species). Type species: *Pygmaeococcus morrisoni* McKenzie, 1960, by monotypy and original designation. *Geococcus* Green, 1902 (7 species). Type species: *Geococcus radicum* Green, 1902, by original designation. *Leptorhizoecus* Williams, 1998 (1 species). Type species: *Leptorhizoecus deharvengi* Williams, 1998. *Brevicoccus* Hambleton, 1946 (1 species). Type species: *Brevicoccus clavisetosus* Hambleton, 1946, by monotypy and original designation. *Prorhizoecus* Miller & McKenzie, 1971 (1 species). Type species: *Prorhizoecus atopoporus* Miller and McKenzie, 1971, by monotypy and original designation (1 species).

KEY TO GENERA OF RHIZOECINI
(after Williams (1998) and Tang (1992) with changes and additions)

1. Anal ring with protuberances ..... *Pseudorhizoecus*
   – Anal ring without protuberances 2
2. Anal ring ventral in position ..... *Leptorhizoecus*
   – Anal ring dorsal in position 3
3. Bulbous tubular ducts present 4
   – Bulbous tubular ducts absent 5
4. Cerarii present ..... *Prorhizoecus*
   – Cerarii absent ..... *Pygmaeococcus*
5. All body setae knobbed 6
   – All body setae flagellate 7
6. Antennae 3 segmented ..... *Capitisetella*
   – Antennae 4 segmented ..... *Brevicoccus*
7. Antennae with 5-6 segments 8
8. Anal lobes well developed, with a stout spine-like seta ..... *Geococcus*
   – Anal lobes not well developed, without spine-like seta 9

9. Body covered by tritubular cerores surrounded by multilocular pores ..... *Marottarhizoecus* gen. n.
– Body without tritubular cerores surrounded by multilocular pores 10
10. Body with tritubular cerores ..... *Rhizoecus*
– Body without tritubular cerores, only with bitubular cerores, or they absent ..... *Ripersiella*

By this new descriptions the number of genera in the Rhizoecinae subfamily increased to 12, and to 10 in the Rhizoecini tribe. The Rhizoecinae subfamily contains now 162, and the tribe Rhizoecini 138 species.

ACKNOWLEDGEMENTS

The authors would like to thank the OTKA (Hungarian National Science Found) (Grant No. T 034236) for financial support of this project. To Dr. S. MAHUNKA who made available to us for study the Collection of Arachnida of the Hungarian Natural History Museum (Hungary, Budapest), and to Dr. T. Jermy for the English corrections.

REFERENCES

BEN-DOV Y., 1994 - A systematic catalogue of the mealybugs of the World (Insecta: Homoptera: Coccoidea: Pseudococccidae and Putoidae). - Intercept Ltd., Andover, 1-686.

HAMBLETON E. J., 1946 - Studies of Hypogeic Mealybugs. - Rev. de Entomologia 17: 1-77.

HAMBLETON E. J., 1976 - A revision of the New World mealybugs of the genus *Rhizoecus* (Homoptera: Pseudococcidae). - USDA Techn. Bull., 1522: 1-88.

KOZÁR F., MILLER D. (2000): World revision of the genus *Ortheziola* Sulc, 1895 (Homoptera: Coccoidea) with descriptions of eleven new species. - Systematic Entomology 25:15-45.

MILLER D.R., BEN-DOV Y., GIBSON G.A.P., 2001 (1999) - Scalenet: a searchable information system on scale insects. - Entomologica 33: 37-46.

TANG F. T., 1992 - The Pseudococcidae of China. - Chinese Agricultural Science Technology Press, Beijing, 1-767.

WILLIAMS D. J., GRANARA DE WILLINK M. C., 1992 - Mealybugs of Central and South America. - C. A. B. International Institute of Entomology, London, 1-635.

WILLIAMS, D. J.. 1998 - Mealybugs of the genera *Eumyrmococcus* Silvestri associated with the ant genus *Acropyga* Roger and a review of the subfamily Rhizoecinae (Hemiptera, Coccoidea, Pseudococcidae). - Bull. nat. Hist. Mus. Lond. (Ent.). 67: 1-64.

DR. FERENC KOZÁR AND ZSUZSANNA KONCZNÉ BENEDICTY - Plant Protection Institute, Hungarian Academy of Sciences, Herman Ottó út 15, 1022 Budapest, H-1525 Budapest P. O. Box 102, Hungary. E-mail: h2405koz@ella.hu

Accepted 16 May 2002