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Two new species of scale insects (Hemiptera, Coccoidea) from Sardinia (Italy) with a check list of Sardinian Coccoidea

Abstract - Two new species of scale insects collected in Sardinia (Italy) are described and illustrated: *Spinococcus giuliae* sp. n. (Pseudococcidae) off the roots of *Umbilicus rupestris* (Crassulaceae) and *Micrococcus sardous* sp. n. (Micrococcidae) off the root of an undetermined grass (Poaceae) growing near the sea. An identification key to *Micrococcus* species and a revised list of the scales presently known in the island are also provided.

Riassunto - *Due nuove specie di cocciniglie (Hemiptera, Coccoidea) della Sardegna (Italia) con una check list dei Coccoidea sardi*

Vengono descritte due nuove specie di cocciniglie, *Spinococcus giuliae* sp. n. (Pseudococcidae) e *Micrococcus sardous* sp. n.(Micrococcidae), raccolte in Sardegna. Gli esemplari di *S. giuliae* sono stati raccolti su radici di *Umbilicus rupestris* (Crassulaceae) sul Monte Albo (Sassari), mentre *M. sardous* è stato raccolto su radici di una graminacea indeterminata sulla spiaggia di Capo Ceraso (Olbia). Vengono presentati una chiave di identificazione delle 8 specie di *Micrococcus* finora note e una check list degli Hemiptera Coccoidea di Sardegna.

Key words: Pseudococcidae, *Spinococcus giuliae* n. sp., Micrococcidae, *Micrococcus sardous* n.sp., genus *Micrococcus* identification key.

INTRODUCTION

One hundred and one species of scale insects (Hemiptera: Coccoidea) are currently known from Sardinia, (Pellizzari & Russo, 2006), including alien invasive species,. When one considers that almost 400 species of scale insect are known from mainland Italy (Pellizzari, 2010), the few recorded from Sardinia suggests that the scale insect fauna of the island is still largely unknown. During a survey, carried out some years ago, mostly in North-eastern Sardinia, some apparently new scale insect species were collected. Their presence on the island was briefly commented on a previous paper (Pellizzari & Fontana, 1996). In the present paper, two new species, one belonging to *Spinococcus* (Pseudococcidae) and the other to *Micrococcus* (Micrococcidae) are described and illustrated. The opportunity is taken to also revise the list of Sardinian scale insects based on previous papers (Pellizzari & Fontana, 1996; Pellizzari, 2003; Pellizzari & Russo, 2006) and on ScaleNet (Ben-Dov *et al*., 2011).

MATERIALS AND METHODS

Specimens were slide mounted according to the procedures of Kosztarab and Kozár (1988). Measurements and frequencies are given as mean, followed by the ranges in parentheses. Terminology follows that of Williams (1985) and Miller & Williams (1995) respectively for Pseudococcidae and Micrococcidae.

Specimens depository: The Scientific Museums of the University of Padova (Italy), Department of Environmental Agronomy & Crop Production - Entomology (DEAE);

PSEUDOCOCCIDAE

Spinococcus giuliae n. sp.

Adult female (Fig. 1)

Material studied: **Holotype**: adult female, Mount Albo, Nuoro province, Sardinia (**Italy**), off roots of *Umbilicus rupestris* (Crassulaceae), 21 May 1995, DEAE, slide n.651/3. **Paratypes:** 4 adult females, same data as holotype. Slides n.651/1, 651/2, 651/4, 651/5.

Living specimens: body broadly oval, convex. Derm covered with white powdery wax, body segmentation apparent.

Mounted specimen. Body broadly oval, 2 (1.7-2.2) mm long, 1.4 (1-1.6) mm wide; anal lobes poorly developed.

Venter. Labium 3-segmented, with 2 pairs of setae on unsclerotised basal segment, one pair on middle segment and 5 pairs on apical segment. Stylet loop not quite reaching level of second coxae Antennae 9-segmented; total length of each antenna 343 (325-370) μm. Scape with 3 setae, 2nd segment with 2 setae and 1 sensory pore, 3rd segment without setae, 4th segment with 2 setae, 5th segment with 1 fleshy seta, 6th segment with 1 fleshy seta + 2 setose setae, 7th segment with 3 fleshy setae + 7 flagellate or hair-like. Eyes near margin, protruding. Legs well developed; hind coxa without translucent pores; trochanter with 2 campaniform pores. Measurements of metathoracic leg (in μm): coxa 117 (100-125); trochanter + femur 216 (190-240); tibia 176 (150-200); tarsus 80 (70-90); tarsal digitules knobbed; claw digitules longer than claw, knobbed; claw about 18 μm long, with a small denticle. Body setae: ventral setae hair-like, distributed in a transvers single row on each abdominal segment, with the 2 medial setae usually longer; other setae present near coxae, on thorax, and on head. Minute hair-like setae sparse on abdominal segments; minute spine-like setae, each about 4-6 μm long, distributed on body submargin. Trilocular pores, each 3–4 μm wide, numerous, forming transverse bands on posterior abdominal segments, becoming less abundant anteriorly and sparse on head and on medial and submarginal parts of thorax; also with 2–6 pores laterad to each spiracle opening. Tubular ducts absent. Quinquelocular disc-pores and multilocular

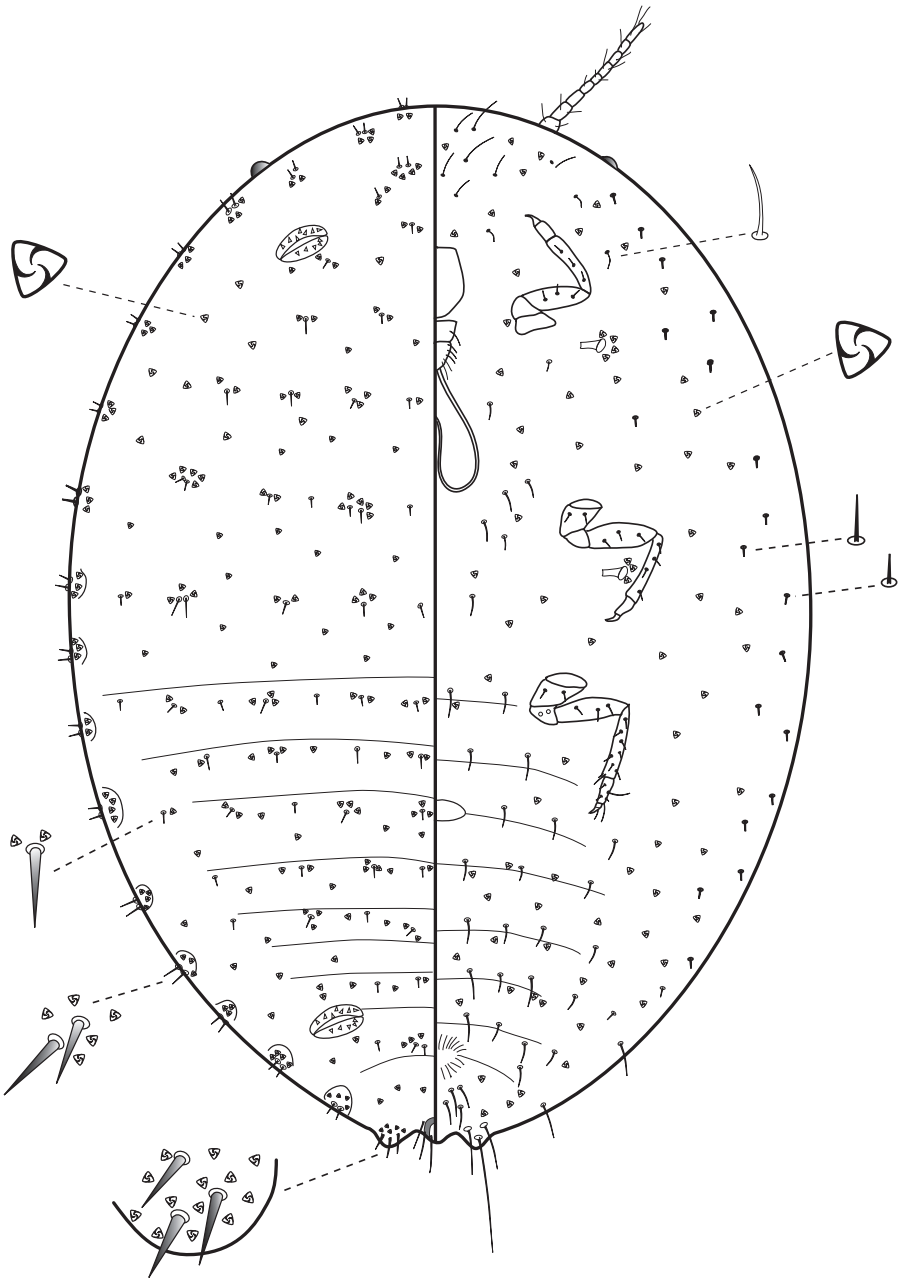

Fig. 1 - *Spinococcus giuliae* sp. n.: adult female.

disc-pores very rare or absent: one of the five specimens had one quinquelocular disc-pore and another had one multilocular disc-pore (slides n.651/3 and n.651/4) near vulva. Circulus present between segment III and IV, oval, poorly developed. Anal lobes each with one apical seta 117 (100-175) μm long and 2 subapical setae. Spinulae present on last abdominal segments.

Dorsum. Cerarii numbering 18 pairs, each with 2 spinose setae, each about 10 μm long, and 3-5 associated trilocular pores. On two specimens, some abdominal cerarii were elevated from surrounding derm (slides n.651/2 and n.651/4), suggesting that all cerarii could be elevated from surrounding derm on young females. Anal lobe cerarii with 3 spinose conical setae, longer than other cerarian setae, each about 16 μm long, and 9-12 trilocular pores.

Dorsal surface with spinose setae similar to cerarian setae, each 6-8 μm long, each often associated with 2 or 3 trilocular pores, but sometimes with 2 setae close together, plus 5 or 6 trilocular pores. Trilocular pores otherwise evenly distributed, each about 4 μm wide. Anterior pair of ostioles membranous but posterior ostioles with inner edge of lips lightly sclerotized; each lip with 5-8 trilocular pores. Multilocular pores absent. Tubular ducts absent. Anal ring with a double row of pores and 3 pairs of setae.

Derivatio nominis. The species is named after my younger daughter Giulia.

Comments

There is some disagreement about the status of *Spinococcus* Borchsenius, which was a replacement name for *Acanthococcus* Kiritchenko (a homonym of *Acathococcus* Signoret). Danzig (1980) synonymized *Spinococcus* with *Peliococcus* Borchsenius. According to Williams (1962), Kostzarab & Kozár (1988) and Tang (1992), the main morphological characters of the genus *Spinococcus* (presence of 17 or 18 pairs of cerarii, each consisting of two conical setae with some triloculars at their base, and presence of dorsal setae, similar to cerarian setae, associated with triloculars) differ from *Peliococcus* which is characterized by dorsal clusters of multilocular disc-pores, each cluster with one or more tubular ducts in centre (Williams, 1962; Kosztarab, 1996). The boundaries of the genus *Peliococcus* appear unclear since species previously placed in the genus *Spinococcus* (i.e. *S. morrisoni* Kiritshenko, *P. multispinus* Sirawa) were later included in *Peliococcus* (Danzig, 1980). Because of these differences, several authors (for instance, Kostzarab & Kozár, 1988; Tang, 1992; Marotta & Tranfaglia, 1995; Lagowska, 2005) have recognised both *Spinococcus* and *Peliococcus*. Indeed, Danzig herself, in a subsequent paper (2001), distinguishes two distinct forms in the genus *Peliococcus*, named respectively the "*Peliococcus* type" and the "*Spinococcus* type". For these reasons. the new species has been described in the genus *Spinococcus* Borchsenius.

The most peculiar character of *S. giuliae* is the absence, or extreme scarcity, of disc-pores and the absence of tubular ducts. Many Coccoidea have few or even no multilocular disc-pores near their genital opening and this character is generally associated with ovoviviparity. However, tubular ducts are usually present in Pseudococcids, at least on the venter.

In the Mediterranean basin, the genus *Spinococcus* previously included *S. convolvuli* Ezzat, recorded in Egypt, *S. mathisi* (Balachowsky) known from France and Tunisia, and *S. multispinus* (Siraiwa) recorded from southern Italy (Marotta & Tranfaglia, 1995).

MICROCOCCIDAE

Micrococcus sardous n. sp.

Adult female (fig. 2)

Material studied: **Holotype**: adult female, Capo Ceraso, Olbia province, Sardinia **(Italy)**, off roots of *Ammophila arenaria*? (Poaceae) growing near the beach, 24.v.1995, DEAE, slide n.712/1.
Paratypes: 6 adult females, same data as holotype. Slides n.712/2-7; 2 first instars, slide n.712/8.

Living specimens. Body shape broadly oval, very convex or almost spherical in reproductive females; red brown in colour.
Mounted specimen. Body broadly oval in pre-reproductive female, almost round in reproductive female, 3.12 (2.2-3.6) mm long, 2.9 (1.7-3.6) mm wide.
Venter. Antennae 3-segmented, segment I: 65 (56-70) μm long, II 46 (40-50) μm, III 105 (100-110) μm. Labium apparently of one segment, 110 μm long and 132 μm wide, with 4 pairs of setae, each about 34 μm long. Stylet loop reaching level of mid coxae. Legs well developed, femur enlarged, tarsus and tibia fused; trochanter + femur 216 (200-250) μm long, tibia + tarsus 233 (210-270) μm long, claw without denticle, 43 μm long, tarsal digitules 40 μm long.
Spiracles well developed, 80 μm wide and 90 μm long, each spiracle surrounded by a slightly sclerotised area; atrium of spiracle filled with about 50 intrastigmatic multilocular pores. Parastigmatic multilocular pores, each 8 μm wide with 7-20 loculi, distributed irregularly in a submarginal band on thorax, most numerous near spiracles, and forming 2 or 3 loose groups on submargin of abdominal segments, plus a few laterad to anal opening; rare on middle of abdominal segment V. Tubular ducts present, of two sizes: larger 20.4 (16-24) μm long, 6.4 μm wide, with thin inner filament about 16 μm long, distributed on mid-abdominal segments; smaller type slender, 27 (24-32) μm long and 2.4-3.3 μm wide, with inner filament about 20 μm long, distributed medially on thorax and head, but most abundant on apex of head. Ventral setae sparse, small, about 11 μm long. Discoidal pores circular, with sclerotised rim, each about 5-6.4 μm wide, scattered. Minute bilocular pores sparse, mainly on body submargin; larger bilocular pores sparse on thorax.
Dorsum. Apparent anal lobes broad, with long and stout setae, number variable, from 4 to 8 on each lobe, each seta 380 μm (335-416) long. True anal lobes modified into two crescentic anal plates surrounding anal opening, each bearing 4 setae, 2 on anterior

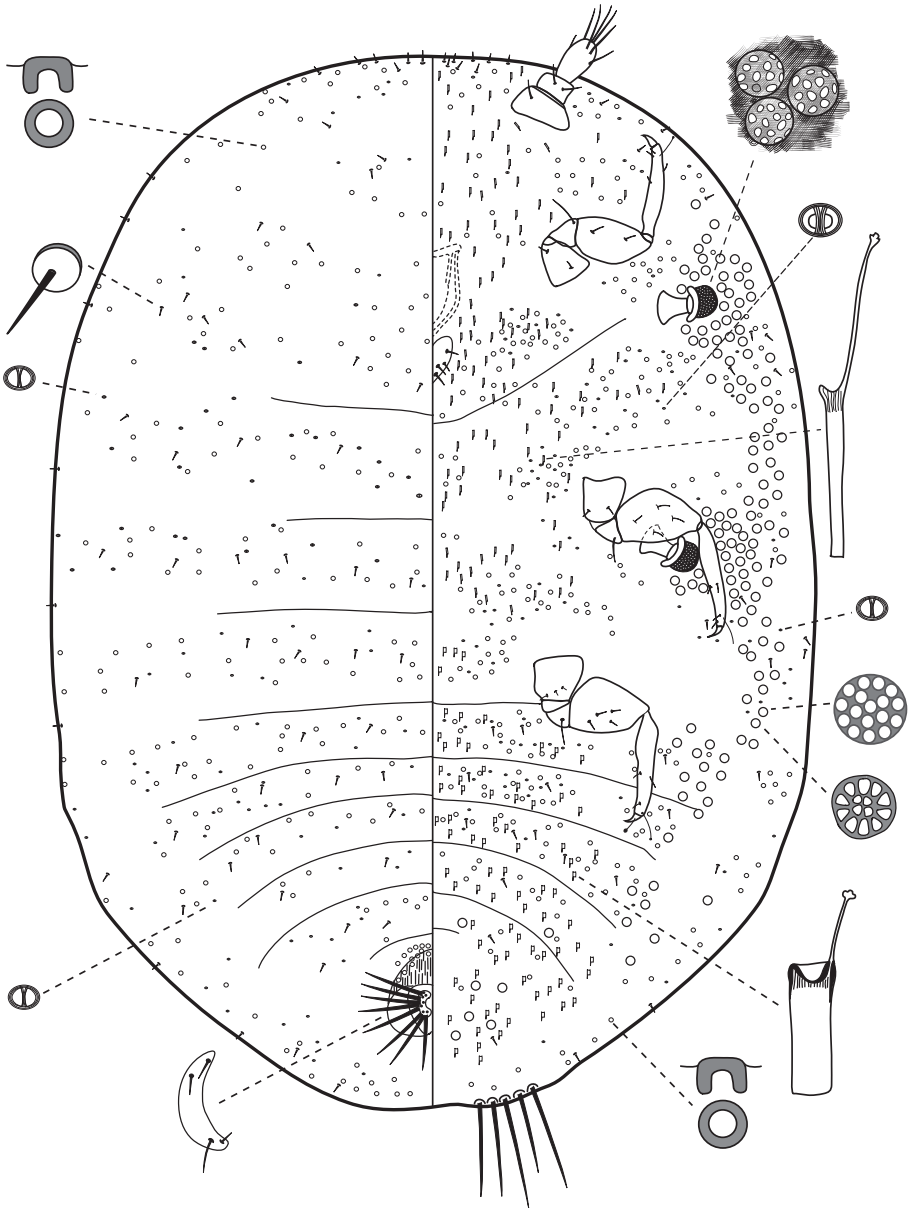

Fig. 2 - *Micrococcus sardous* sp. n.: adult female

edge, about 16 μm, long, 1 on posterior edge, 65 μm long, plus 1 near apex of posterior edge, about 10 μm.
Anal opening situated away from abdominal margin. Anal ring with 2 or 3 rows of cells and with 7-10 long setae on each side, longest 160 (120-200) μm long, smallest 138 (128-144) μm. Discoidal pores with sclerotised rim, circular, about 4.5-6.5 μm wide, scattered over dorsum. Short setae, each 6.5 μm long, scattered. Small and minute bilocular pores sparse throughout.

Derivatio nominis
The species name *sardous* is the Latin adjective, gender masculine, meaning "of Sardinia, pertinent to Sardinia", after the Italian island of Sardinia where this species was collected.

Comments
The genus *Micrococcus* was diagnosed by Marotta *et al*. (1995) and Miller *et al*. (2005). *M. sardous* is near to *M. baeticae* Matile-Ferrero & Williams, but differs mainly as follows (character-states on *M. baeticae* in brackets): 1) anal opening some distance from apex of abdomen (very close to apex of abdomen) 2) absence or paucity of parastigmatic multilocular pores on ventral abdominal segments (parastigmatic multilocular pores forming bands across abdominal segments), and 3) presence of several discoidal pores with a sclerotised rim around labium (absent on *M. baeticae*). On the other hand, the morphology of the first-instar nymph of *M. sardous* (slides n.712/8 and in.712/2, inside the female body) is close to that of *M. bodenheimeri* Bytinski-Salz (Miller & Williams, 1995): it has parastigmatic pores, each with 5-8 loculi) on each side of the body, in groups of 3 - 4 near each spiracle and hind coxa, with one pore inside each spiracle, and there are no pores on the body margin between the anterior and posterior spiracles.
The genus *Micrococcus* is presently known only in countries surrounding the Mediterranean basin (Morocco, Tunisia, Algeria, Spain, Sardinia and Italy mainland, Croatia, Turkey, Cyprus, Israel) (Marotta *et al*., 1995; Miller *et al*., 2005; Matile-Ferrero & Williams, 2006; Kaydan *et al*., 2007; Masten Milek & Simala, 2008). All were collected off roots of wild or cultivated Gramineae and are often associated with ants of the genus *Tapinoma*. With this new species, the known *Micrococcus* species reaches 8. In Sardinia, 2 other *Micrococcus* species are known, namely *M. silvestrii* Leonardi and *M. similis* Leonardi.

KEY TO ADULT FEMALE OF *MICROCOCCUS*
(modified after Miller & Williams, 1995)

1 Parastigmatic pores absent or restricted to thorax.....**2**
– Parastigmatic pores present on thorax and abdomen **5**

2 (1) Parastigmatic pores absent; with fewer than 10 setae on each anal plate.....**3**
– Parastigmatic pores present near each spiracular plate; with more than 10 setae on each anal plate. .....*similis* Leonardi

3 (2) Some marginal discoidal pores oval, with oval sclerotization in shape of an eye (according to Miller & Williams, based on 2nd instar female ..... ***M. rungsi*** Balachowsky
– Marginal discoidal pores all round, or if oval, without sclerotization in shape of an eye **4**

4 (3) Antennae 3-segmented; longest seta on apparent anal lobes 237 (172-306) μm long ..... ***M. bodenheimeri*** Bytinsky-Salz
– Antennae 2-segmented (segments III and II partially or completely fused); longest seta on apparent anal lobes 90 (83-96) μm long .....***M. dumonti*** Balachowsky.

5 (1) Longest dorsal seta on metathorax longer than 100 μm; with 9 or more setae on each hind femur ..... ***M. longispinus*** Miller & Williams
– Longest dorsal seta on metathorax shorter than 100 μm; with 8 or fewer setae on each hind femur.....**6**

6 (5) Tibia + tarsus more than 300 mm long; with more than 5 parastigmatic pores near each lateral margin of abdominal segment IV.....***M. silvestrii*** Leonardi
– Tibia + tarsus less than 300 mm long; parastigmatic pores absent on margin of abdominal segment I **7**

7 (6) Parastigmatic multilocular pores present on margin of head, thorax and abdominal segment I and II..... ***M. confusus*** Miller & Williams
– parastigmatic multilocular pores present on margin of head and thorax and also submarginally or medially on other abdominal segments **8**

8 (7) Anal ring situated on apex of abdomen. Parastigmatic multilocular pores forming wide bands across segments II-V of abdomen ..... ***M. baeticae*** Matile Ferrero & Williams
– Anal ring situated far from apex of abdomen. Parastigmatic multilocular pores forming loose groups on submargin of abdominal segments II-VIII ....***M. sardous*** n. sp.

CONCLUSION

With the addition of the newly described species and the revision of the previous lists (Pellizzari & Fontana, 1996; Pellizzari & Russo, 2005), 105 scale insect species have now been recorded from Sardinia. The revised list is shown in Table 1. The previously recorded mealybug *Chaetococcus sulcii* (Green) (Ben-Dov *et al*., 2011) proved to be an erroneous record for Sardinia. So far, *C. sulcii* is known in Italy only in Valle d'Aosta (North Italy) (Matile-Ferrero & Pellizzari, 2002). The diaspidid *Melanaspis inopinata* (Leonardi) is added to the list of known species from the island (Melis, 1930). The presence of the eriococcid *Acanthococcus devoniensis* (Green) in Sardinia is regarded as

Table 1 - Check-list of scale insects recorded in Sardinia. An asterisk marks the alien introduced species.

Family	Species	Validation source
ACLERDIDAE	*Aclerda berlesii* Buffa, 1897	Pellizzari & Russo, 2005
ASTEROLECANIIDAE	*Asterodiaspis bella* (Russell, 1941)	Pellizzari & Fontana, 1996
»	*Asterodiaspis ilicicola* (Targioni Tozzetti, 1888)	Pellizzari & Fontana, 1996
»	*Planchonia arabidis* Signoret, 1876	Pellizzari & Fontana, 1996
»	*Planchonia zanthenes* (Russell, 1941)	Pellizzari & Russo, 2005
»	*Pollinia pollini* (Costa, 1857)	Pellizzari & Russo, 2005
COCCIDAE	*Ceroplastes rusci* (Linnaeus, 1758)*	Pellizzari & Russo, 2005
»	*Ceroplastes sinensis* Del Guercio, 1900*	Pellizzari & Russo, 2005
»	*Coccus hesperidum* Linnaeus, 1758*	Pellizzari & Russo, 2005
»	*Eulecanium ericae* (Balachowsky, 1936)	Pellizzari & Fontana, 1996
»	*Eulecanium tiliae* (Linnaeus, 1758)	Pellizzari & Russo, 2005
»	*Filippia follicularis* Targioni Tozzetti, 1867	Pellizzari & Russo, 2005
»	*Lecanopsis myrmecophila* Leonardi, 1908	Pellizzari & Russo, 2005
»	*Lichtensia viburni* Signoret, 1873	Pellizzari & Fontana, 1996
»	*Parthenolecanium persicae* (Fabricius, 1776)	Pellizzari & Russo, 2005
»	*Pulvinaria floccifera* (Westwood, 1870)*	Pellizzari & Russo, 2005
»	*Pulvinaria vitis* (Linnaeus, 1758)	Pellizzari & Russo, 2005
»	*Pulvinariella mesembryanthemi* (Vallot, 1830)*	Pellizzari & Russo, 2005
»	*Rhizopulvinaria maritima* Canard, 1967	Pellizzari & Fontana, 1996
»	*Saissetia coffeae* (Walker, 1852)*	Pellizzari & Russo, 2005
»	*Saissetia ficinum* (Paoli, 1915)	Pellizzari & Russo, 2005
»	*Saissetia* oleae (Olivier, 1791)*	Pellizzari & Russo, 2005
»	*Sphaerolecanium prunastri* (Fonscolombe, 1834)	Pellizzari & Russo, 2005
»	*Stotzia ephedrae* (Newstead,1901)	Pellizzari, 2003
DIASPIDIDAE	*Abgrallaspis cyanophylli* (Signoret, 1869)	Pellizzari & Russo, 2005
»	*Adiscodiaspis ericicola* (Marchal, 1909)	Pellizzari & Russo, 2005
»	*Aonidia lauri* (Bouché, 1833)	Pellizzari & Russo, 2005
»	*Aonidia mediterranea* (Lindinger, 1910)	Pellizzari & Fontana, 1996
»	*Aonidiella aurantii* (Maskell, 1879)*	Pellizzari & Russo, 2005
»	*Aspidiotus nerii* Bouché, 1933*	Pellizzari & Russo, 2005
»	*Aulacaspis rosae* (Bouché, 1833)	Pellizzari & Russo, 2005
»	*Carulaspis minima* (Signoret, 1869)	Pellizzari & Russo, 2005
»	*Chionaspis etrusca* Leonardi, 1908	Pellizzari & Fontana, 1996
»	*Chrysomphalus dictyospermi* (Morgan, 1889)*	Melis, 1930, Longo *et a*l., 1995
»	*Diaspidiotus bavaricus* (Lindinger, 1912)	Pellizzari & Fontana, 1996
»	*Diaspidiotus cecconii* (Leonardi, 1908)	Pellizzari & Russo, 2005
»	*Diaspidiotus labiatarum* (Marchall, 1909)	Pellizzari & Fontana, 1996

»	*Diaspidiotus lenticularis* (Lindinger, 1912)	Pellizzari & Fontana, 1996
»	*Diaspidiotus ostreaeformis* (Curtis,1843)	Pellizzari & Russo, 2005
»	*Diaspidiotus perniciosus* (Comstock, 1881)*	Pellizzari & Russo, 2005
»	*Diaspis echinocacti* (Bouché, 1833)*	Pellizzari & Russo, 2005
»	*Duplachionaspis berlesii* (Leonardi, 1898)	Pellizzari & Russo, 2005
»	*Dynaspidiotus ephedrarum* (Lindinger, 1912)	Pellizzari & Russo, 2005
»	*Epidiaspis leperii* (Signoret, 1869)	Pellizzari & Russo, 2005
»	*Furchadaspis zamiae* (Morgan, 1890)*	Pellizzari & Russo, 2005
»	*Gonaspidiotus minimus* (Leonardi, 1896)	Pellizzari & Fontana, 1996
»	*Hemiberlesia lataniae* (Signoret, 1869)*	Pellizzari & Fontana, 1996
»	*Hemiberlesia rapax* (Comstock, 1881)	Pellizzari & Russo, 2005
»	*Lepidosaphes beckii* (Newmann, 1869)*	Pellizzari & Russo, 2005
»	*Lepidosaphes conchiformis* (Gmelin, 1789)	Pellizzari & Russo, 2005
»	*Lepidosaphes flava* (Signoret, 1870)	Pellizzari & Fontana, 1996
»	*Lepidosaphes gloverii* (Packard, 1869)*	Pellizzari & Russo, 2005
»	*Lepidosaphes ulmi* (Linnaeus, 1758)	Pellizzari & Russo, 2005
»	*Leucaspis pusilla* Loew, 1883	Pellizzari & Russo, 2005
»	*Leucaspis signoreti* Targioni Tozzetti, 1868	Pellizzari & Russo, 2005
»	*Lineaspis striata* (Newstead, 1897)	Pellizzari & Russo, 2005
»	*Melanaspis inopinata* (Leonardi)	Melis 1930
»	*Parlatoria oleae* (Colvée, 1880)	Pellizzari & Russo, 2005
»	*Parlatoria pergandii* Comstock, 1881	Pellizzari & Russo, 2005
»	*Parlatoria proteus* (Curtis, 1843)*	Pellizzari & Russo, 2005
»	*Parlatoria ziziphi* (Lucas, 1853)*	Pellizzari & Russo, 2005
»	*Pseudaulacaspis pentagona* (Targioni Tozzetti, 1886)*	Pellizzari & Russo, 2005
»	*Rungaspis capparidis* (Bodenheimer, 1929)	Pellizzari, 2003
»	*Saharaspis ceardi* (Balachowsky, 1928)	Pellizzari & Fontana, 1996
»	*Targionia nigra* Signoret, 1870	Pellizzari & Fontana, 1996
»	*Targionia vitis* (Signoret, 1876)	Pellizzari & Russo, 2005
»	*Unaspis euonymi* (Comstock, 1881)*	Pellizzari & Russo, 2005
ERIOCOCCIDAE	*Acanthococcus acutus* (Goux, 1938)	Pellizzari & Fontana, 1996
»	*Acanthoccus araucariae* araucariae (Maskell, 1879)*	Pellizzari & Fontana, 1996
»	*Acanthoccus* devoniensis (Green, 1896)??	Hoy, 1963 Longo *et a*l., 1995
»	*Acanthococcus ericae* Signoret	Tranfaglia & Esposito, 1985
»	*Gossyparia spuria* (Modeer, 1778)	Pellizzari & Russo, 2005
KERMESIDAE	*Kermes bacciformis* Leonardi, 1908	Pellizzari & Russo, 2005
»	*Kermes ilicis* (Linnaeus, 1758)	Pellizzari & Russo, 2005
»	*Kermes vermilio* Planchon, 1864	Pellizzari & Russo, 2005
LECANODIASPIDIDAE	*Lecanodiaspis sardoa* Targioni Tozzetti, 1869	Pellizzari & Russo, 2005

MONOPHLEBIDAE	*Gueriniella serratulae* (Fabricius, 1775)	Pellizzari & Russo, 2005
»	*Icerya purchasi* Maskell, 1879*	Pellizzari & Russo, 2005
MICROCOCCIDAE	*Micrococcus sardous* sp. n.	Present paper
»	*Micrococcus silvestrii* Leonardi, 1907	Pellizzari & Russo, 2005
»	*Micrococcus similis* Leonardi, 1907	Pellizzari & Russo, 2005
PSEUDOCOCCIDAE	*Balanococcus orientalis* Dantsig & Ivanova, 1976	Pellizzari & Russo, 2005
»	*Chorizococcus rostellum* (Lobdell, 1930)	Pellizzari & Fontana, 1996
»	*Dysmicoccus kozari* Pellizzari & Fontana, 1996	Pellizzari & Fontana, 1996
»	*Dysmicoccus pietroi* Marotta, 1992	Pellizzari & Fontana, 1996
»	*Euripersia inquilina* (Leonardi, 1908)	Pellizzari & Russo, 2005
»	*Euripersia sardiniae* (Leonardi, 1908)	Pellizzari & Russo, 2005
»	*Nipaecoccus delassusi* (Balachowsky, 1925)	Pellizzari & Russo, 2005
»	*Peliococcus manifectus* Borchsenius, 1949	Pellizzari, 2003
»	*Phenacoccus aceris* (Signoret, 1875)	Pellizzari & Fontana, 1996
»	*Phenacoccus asphodeli* Goux, 1942	Pellizzari, 2003
»	*Phenacoccus graminicola* Leonardi, 1908	Pellizzari & Russo, 2005
»	*Phenacoccus incertus* (Kiritchenko, 1940)	Pellizzari & Russo, 2005
»	*Planococcus citri* (Risso, 1813)	Pellizzari & Russo, 2005
»	*Planococcus ficus* (Signoret, 1875)	Pellizzari & Russo, 2005
»	*Planococcus vovae* (Nassonov, 1908)	Pellizzari & Fontana, 1996
»	*Pseudococcus calceolariae* (Maskell, 1878)°	Pellizzari & Russo, 2005
»	*Pseudococcus longispinus* (Targioni Tozzetti, 1867)*	Pellizzari & Russo, 2005
»	*Pseudococcus viburni* (Signoret, 1875) *	Pellizzari & Russo, 2005
»	*Spinococcus giuliae* sp. n.	Present paper
»	*Trabutina mannipara* (Hemprich & Ehrenberg, 1829)	Pellizzari & Russo, 2005
»	*Trionymus multivorus* (Kiritchenko, 1936)	Pellizzari, 2003
»	*Trionymus myrmecarius* (Leonardi, 1908)	Pellizzari & Russo, 2005
PUTOIDAE	*Puto palinuri* Marotta e Tranfaglia, 1993	Pellizzari & Fontana, 1996
»	*Puto superbus* (Leonardi, 1907)	Pellizzari & Russo, 2005

doubtful. It was first reported from Sardinia by Leonardi (1908, p.159). Later, Leonardi himself (1920) placed this first record among the synonyms of *A. ericae* (Signoret) and clearly reported that the species was collected in Sardinia. Subsequent authors (Paoli, 1916; Hoy, 1963; Pellizzari & Russo, 2005) only referred to the first record of 1908. Tranfaglia & Esposito (1985) redescribed *A. ericae* from old specimens preserved in the Portici collection, collected in Sardinia possibly by Leonardi, and labelled *E. devoniensis*. Some specimens collected more recently in Sardinia by Pellizzari and Fontana and identified as *A. devoniensis* (Pellizzari & Fontana, 1996) have proved to be a misidentification of *A. ericae* (F. Kozár, personal communication, 2011). The old record of *Carulaspis visci* (Schrank) is regarded as a misidentification of *C. minima* or, likely, of *C.juniperi,* with which. it was in the past confused, until the situation was clarified by

Baccetti (1960). This is strengthen by the fact that the only host plant of the true *C. visci*, is *Viscum album*, and this epiphytic plant is absent in Sardinia (Zuber, 2004).

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