

## New data on the distribution of scale insects (Hemiptera, Coccoomorpha)

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**Abstract.** – This paper reports new country records of some scale insect species (Hemiptera Coccoomorpha) from countries of Palearctic, Afrotropical and Neotropical regions, based on specimens preserved in the collections of DAFNAE (University of Padova, Italy) and DiSSPA (University of Bari, Italy). New host plants are also reported. The scale insects recorded belong to the families Asterolecaniidae, Coccidae, Diaspididae, Monophlebidae, Ortheziidae and Pseudococcidae.

**Résumé.** – **Nouvelles données sur la distribution de Cochenilles (Hemiptera Coccoomorpha).** Nous rendons compte des nouvelles récoltes de quelques espèces de Cochenilles provenant de différents pays des régions Paléarctique, Afrotropicale et Neotropicale, spécimens conservés dans les collections des Départements DAFNAE (Université de Padoue, Italie) et DiSSPA (Université de Bari, Italie). La liste des plantes-hôtes nouvelles est également fournie. Les espèces concernées appartiennent aux familles des Asterolecaniidae, Coccidae, Diaspididae, Monophlebidae, Ortheziidae et Pseudococcidae.

**Keywords.** – Alien, invasive, quarantine, pest records, ornamentals.

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A review of scale insect material (Hemiptera, Coccoomorpha) collected by the authors or their colleagues or sent to them for study purpose shows that several of the identified species had not yet been recorded in the literature from countries in the Palearctic, Afrotropical and Neotropical regions. New records are here reported, listed by country alphabetical order to make easier retrieving the actual scale species data for plant protection purpose also.

Moreover, the revision of pertinent literature highlighted that some country records for Somalia and Yemen (MALENOTTI, 1916; MAROTTA *et al.*, 2001) were not yet reported in ScaleNet (GARCÍA MORALES *et al.*, 2016). Unless a citation is given, the distributional and host plants data provided are taken from ScaleNet and the host plant author and year from THE INTERNATIONAL PLANT NAMES INDEX (2012).

The scale insect specimens are deposited in the collections of DAFNAE (University of Padova, Italy) and DiSSPA (University of Bari, Italy).

### RESULTS

#### Albania

##### Diaspididae

***Koroneaspis aegilopos*** (Koroneos, 1934). – This species has a Turanian-Mediterranean distribution and has been recorded previously from Greece, Crete, Israel, Iran and Iraq on oaks (*Quercus brantii* Lindl., *Q. cerris* L., *Q. coccifera* L., *Q. ithaburensis* Decne.) (Fagaceae). A few specimens were collected in Tirana, on *Quercus trojana* Webb, a new host plant record (8.VII.1996, leg. Fontana).

## Bulgaria

### Diaspididae

*Epidiaspis gennadii* (Leonardi, 1898). – *Epidiaspis gennadii* has a Turanian-Mediterranean distribution (Croatia, Italy, Sicily, Greece, Cyprus, Israel, Jordan, Syria, Turkey and Iran) and lives on *Pistacia* species (Anacardiaceae). It was collected near the Asen fortress (Asenovgrad) on *P. terebinthus* L. (4.IX.2013, leg. Pellizzari & Porcelli).

## Ecuador

### Coccidae

*Pulvinaria psidii* Maskell, 1893. – This soft scale is a well-known pest of tropical fruits, particularly of guava (*Psidium guajava* L., Myrtaceae), and is largely distributed in tropical and subtropical regions. It was collected from Ecuador at Baños on an undetermined host plant (5.III.2004, leg. Buzzetti).

## Egypt

### Diaspididae

*Lindingaspis greeni* (Brain & Kelly, 1917). – *Lindingaspis greeni* was described from specimens collected in South Africa (East London and Durban) on *Chaetachme aristata* E. Mey. ex Planch. (Cannabaceae) (McKENZIE, 1950) and later recorded from Uganda on *Ficus cyathistipula* Warb. (Moraceae) and India and Sri Lanka on mango (Anacardiaceae) and pomegranate (*Punica granatum* L., Lythraceae) (BUTANI, 1993).

Leaves of *Ficus microcarpa* L.f., heavily infested by this species (fig. 2-3) were collected at Marsa Matrouh, (6.XII.2014, leg. Porcelli). The current massive pomegranate planting season in Mediterranean countries suggests to deserve attention to this species.

### Pseudococcidae

*Rastrococcus invadens* Williams, 1986. – The polyphagous *R. invadens* was described from South East Asia in 1986 and since then it spread and established in many Western and Central African countries, mainly as a pest of mango. It was recently recorded also in South America (French Guiana) (GERMAIN *et al.*, 2015). This species was intercepted several times at Great Britain and U.S. ports-of-entry, with specimens originating from Africa and southern Asia (WILLIAMS & MALUMPHY, 2012; MILLER *et al.*, 2014).

This record refers to an interception at the Rome's airport (Ciampino) off an infested *Schefflera* sp. (Araliaceae) imported from Egypt (17.VI.1994, leg. and det. Marotta); by the time, we consider the species acclimated in Egypt and introduced to Italy.

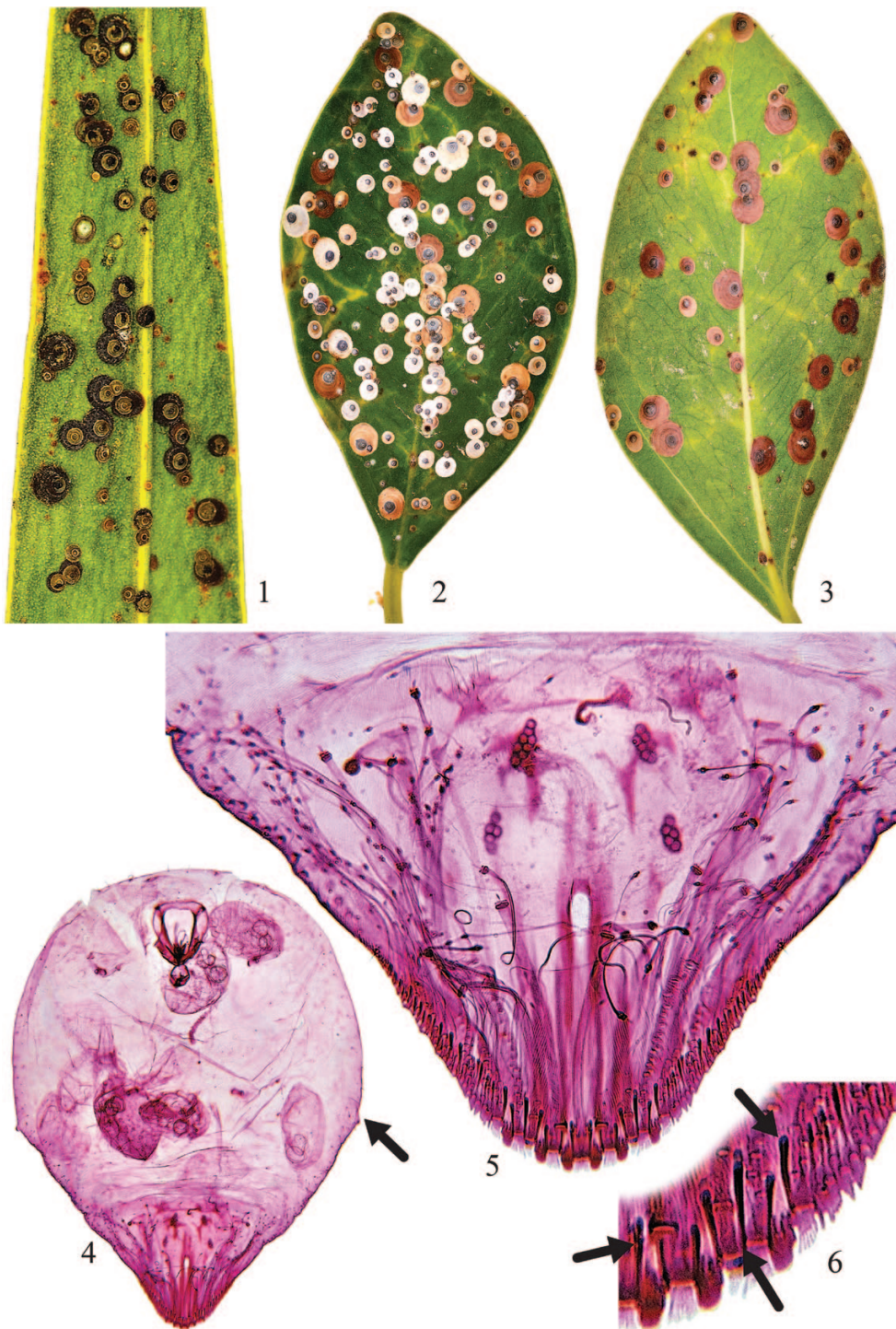
## Italy

### Ortheziidae

The Ortheziid species in the DAFNAE Department collection was checked by F. Kozár in 2013 and two Ortheziid species, not yet recorded in Italy, were identified.

*Arctorthezia helvetica* Kozár & Szita, 2015. – According to the literature, *A. helvetica* is known from the type locality (Switzerland, Valais) and Albania, Greece, Serbia (SZITA *et al.*, 2015; KAYDAN *et al.*, 2016), It has been collected from Central Italy (Abruzzo region, National Park Gran Sasso e Monti della Laga) at two different localities, respectively Monte San Franco, 1200 m a.s.l. (4.XI.1995, leg. Fontana) and Monte di Mezzo, 1500 m a.s.l. (13.IX.1996, leg. Fontana) on herbs.

*Newsteadia susannae* Kozár & Foldi, 2001. – This species is similar to *N. floccosa* (De Geer, 1778), a species largely distributed in the western Palaearctic Region. *N. susannae* has



**Fig. 1-6.** – 1, *Mycetaspis personata* (Comstock) on *Acacia saligna* L. leaf. – 2-3, Leaves of *Ficus microcarpa* L.f. infested by *Lindingspis greeni* (Brain & Kelly) on upper and lower surface. – 4, Body shape of *L. greeni* adult female; the arrow marks the thoracic spur. – 5, Pygidium of *L. greeni* adult female. – 6, Enlargement of the pygidial margin: note the long paraphysis.

been described from specimens collected in forest litter in Corsica (France) and later recorded in Albania, Greece, Serbia (KAYDAN *et al.*, 2016). *N. susannae* has also been collected from two different north Italian localities: Trieste (1.V.1989, *leg. Pellizzari*) and Isola Vicentina, Vicenza district (10.VI.1997, *leg. Pellizzari*).

## Mozambique

### Monophlebidae

*Gigantococcus euphorbiae* (Brain, 1915). – The known distribution of this species is restricted to Benin, South Africa and Zimbabwe (GERMAIN *et al.*, 2010). It lives on plants belonging to different families including mango (*Mangifera indica* L., Anacardiaceae). Adult females were collected on leaves and twigs of *Tamarindus indica* L. (Fabaceae), a new host record, at Cuamba (Niassa province), Campus of the Faculty of Agriculture (5.III.2008, *leg. Olmi*).

## Somalia

### Diaspididae

*Pinnaspis strachani* (Cooley, 1899). – Only 26 scale insect species, mostly Diaspididae, have been recorded from Somalia. The highly polyphagous and cosmopolitan *Pinnaspis strachani* was collected in Somalia, Afgoi in 1972 (11.VI. 1972, *leg. Masutti*) on *Citrus medica* L. and again in 1974 (16.II.1974, *leg. Masutti*) on *Ricinus communis* L. and on undetermined Fabaceae.

Some other diaspidid species, recorded by MALENOTTI (1916) in his paper devoted to Diaspididae of Somalia are not reported by ScaleNet for this country. They are listed here with their host plant: *Hemiberlesia cyanophylli* (Signoret, 1869), collected on *Manihot glaziovii* Müll. Arg. (Euphorbiaceae), *Selenaspis articulatus* (Morgan, 1889) collected on *Xylocarpus obovatus* (Blume) A. Juss. (Meliaceae), a new host plant. They both are cosmopolitan polyphagous species. *Voraspi usambarica* (Lindinger, 1913) was recorded on *Xylocarpus obovatus* (Blume) A. Juss. (Meliaceae) and was known so far only in Tanzania.

## Spain - Canary Islands

### Diaspididae

*Mycetaspis personata* (Comstock, 1883). – *Mycetaspis personata* female is characterized by a small, round, very convex grey-black scale, with shining black exuvia (fig 1). This polyphagous species is largely distributed in tropical and subtropical regions and has been reported as citrus and mango pest. The species was reported from Canary Islands only by NAKAHARA (1982) but “obtained from the literature and agricultural quarantine interception records, and unverified”. *Mycetaspis personata* was neither mentioned in the detailed papers devoted to scale insects of the Canaries by CARNERO HERNANDEZ & PEREZ GUERRA (1986) nor by OROMÍ *et al.* (2010). Our report confirms that the species is acclimated in Gran Canaria. *M. personata* specimens were collected from a highly infested *Acacia saligna* La Billardière (Fabaceae) at Maspalomas, Gran Canaria (10.X.2017, *leg. Pellizzari*).

## United Arab Emirates

### Diaspididae

*Parlatoria crypta* McKenzie, 1943. – This is a polyphagous species, known in several African and Asiatic countries. It was collected on *Ficus* sp. (Moraceae), at the Wadi Wurayah National Park (26.II.2006, *leg. Fontana*).

### Pseudococcidae

*Phenacoccus solenopsis* Tinsley, 1898. – *Phenacoccus solenopsis* is presently a well-known polyphagous, cosmopolitan and highly invasive species. It was recorded from Mushrif Park,

Dubai on an undetermined ornamental plant (6.III.2005, *leg. Fontana*). This is the first record of *P. solenopsis* from the Arabian Peninsula where it was apparently present before its notorious spreading to Asia, where it was recognized as a serious pest of cotton (HODGSON *et al.*, 2008).

*Mirococcus inermis* (Hall, 1925). – This polyphagous species is widespread in countries surrounding the Mediterranean basin and in Ukraine, Russia, Armenia and Central Asia. It was collected at Masafi and Al Ajban (Abu Dhabi) on plants of Chenopodiaceae (10.III.2007, *leg. Fontana*).

### Monophlebidae

*Pseudaspidopectus hyphaeniacus* (Hall, 1925). – The species was collected in Sharjah Desert Park (28.XII.2006) on an undetermined plant. It has been recorded already in the neighbouring Saudi Arabia and Yemen so its presence in the UAE was predictable. It is considered as a potential pest of palms and other cultivated plants (FOLDI & VAN HARTEN, 2004).

## Uzbekistan

### Asterolecaniidae

*Trachycoccus tenax* (Bodenheimer, 1929). – This interesting pit scale is specific to the host-plant genus *Tamarix* (Tamaricaceae). It was described from specimens collected in the Sinai Peninsula (Egypt) (BODENHEIMER, 1929), and later recorded from Tajikistan. No other literature records of this species were known. A few specimens were collected in Uzbekistan on *Tamarix* plants growing along the road between Tashkent and Samarcanda (6.IX.2011, *leg. Pellizzari*). This species probably occurs throughout the extensive natural range of *Tamarix* plants in Middle East and Central Asia, despite very few literature records.

## Yemen

### Pseudococcidae

*Crisicoccus saudiensis* (Matile-Ferrero, 1988). – The mealybug *Crisicoccus saudiensis* was collected on *Withania somnifera* L. (Dunal) (Solanaceae), a new host plant, at Ta'izz (19.XI.1997, *leg. and det. Marotta*) and sent us by S. Marotta several years ago. Previously this species was known only from the type locality [Saudi Arabia, Wadi Bani Malek, on *Acacia asak* (Forssk.) Willd.] (Fabaceae) (MATILE-FERRERO, 1988).

According to ScaleNet only 16 scale insect species have been recorded from Yemen, of which 4 are mealybugs. Apparently, a paper on mealybugs of Yemen by MAROTTA *et al.* (2001) has been overlooked by ScaleNet: this paper reported a total of 26 scale insect species recorded from Yemen by different authors and added 4 new mealybug records namely *Planococcus ficus* (Signoret, 1875), the well-known grapevine mealybug, *Phenacoccus madeirensis* Green, 1923, collected in 1997, presently an invasive species, and *Dysmicoccus carens* Williams, 1970, a species so far known in Bangladesh, India, Pakistan and Sri Lanka. Moreover, the presence in Yemen of *Ferrisia virgata* (Cockerell, 1893), first reported by BEN-DOV (1994), is confirmed.

## DISCUSSION

Sixteen new country records of scale insects based on specimens preserved in the collections of DAFNAE (University of Padova, Italy) and DiSSPA (University of Bari, Italy) are reported. Moreover, some overlooked literature records for Yemen (4 species) and Somalia (3 species) are here added. These data improve our knowledge on the distribution and host plants of the recorded species. Several taxa deserve attention because their potential invasive status in the country of introduction. We consider the most threatening the Diaspididae *Lindingaspis greeni*, *Mycetaspis personata*, *Pinnaspis strachani* and *Selenaspis articulatus*. The Pseudococcidae *Phenacoccus madeirensis*, *Planococcus ficus*, *Phenacoccus solenopsis* and *Rastrococcus invadens* are well-known polyphagous serial invaders.

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