Original Contribution

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Checklist of Scale Insects in Bulgaria (Hemiptera, Coccoidea)

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Abstract: The scale insects of Bulgaria are a comparatively well-studied group. The most substantial contribution was made by Tsalev (1968), who listed 89 species belonging to 8 families, 55 new to Bulgaria. Using all literary sources, we have increased the number of species found in Bulgaria to 145 in 11 families and 65 genera. Thirty-eight of these are of alien origin. The number of species now known in each family is as follows: Diaspididae 48 species in 21 genera, Pseudococcidae 33 species in 16 genera, Coccidae 33 species in 18 genera, Eriococcidae 13 species in 4 genera, Asterolecaniidae 6 species in 2 genera, Kermesidae 4 species in 1 genus, Ortheziidae 3 species in 3 genera, and Matsucoccidae 2 species in 1 genus. The Cerococcidae, Monophlebidae and Putoidae each have only 1 species in 1 genus. The previously unrecorded species listed here are taken from unreferenced text sources and so have not been included in ScaleNet. The paper provides information about outdoor and indoor species found in Bulgaria in last 75 years, since the first list of Coccoidea was published.

Keywords: scale insects, checklist, Bulgaria

Introduction

The increased trade interactions among countries and the import of plants, cut blossoms and bonsai has created great potential for the introduction of alien species of scale insects throughout Europe, including Bulgaria.

In addition, the current changes in climate, the lack of natural regulators (predators and parasitoids) in their new habitats and their high reproduction capacity and their small size and protective waxy coverings make the spread and survival of these insects to new environments highly probable. For these and other reasons, Coccoidea have been shown to be some of the most economically important invasive insects and have proved to be extremely difficult to control.

Here we present the results of an intensive literature search and some recent surveys of Coccoidea in Bulgaria. It forms part of our study on "Invasive scale insects on ornamental plants in Bulgaria and China", financed by the Scientific Studies Fund, Ministry of Education, Youth and Science, Republic of Bulgaria. We also summarise the few previous studies on this group in Bulgaria.

Materials and Methods

This list is based on bibliographic sources and on collections made by the authors and provides information about outdoor and indoor species found in Bulgaria in last 75 years, since the first list of Coccoidea was published. The nomenclature used here for the Coccoidea follows the ScaleNet database (Ben Dov *et al*., 2012). In the discussion below, all species believed to be alian to Bulgaria are in bold.

Results and Discussion

The scale insects of Bulgaria are a comparatively well-studied group. The first list of Coccoidea was published by Chorbadzhiev in 1938 but he included only 23 species on 24 host plants. Later studies are those of Lazarov (1940), Buresh & Lazarov (1956), Tsalev (1968), Kozar *et al*. (1979), Grigorov (1976), Trenchev (1987), Staneva (1992; 2003), Pencheva (1995; 2007); Hodgson & Trencheva (2008), Trencheva *et al.* (2009), Gavrilov (2010) and Trencheva *et al*. (2010). The most substantial contribution was made by Tsalev (1968), who listed 89 species belonging to 8 families, 55 new to Bulgaria.

According to ScaleNet (Ben Dov *et al*., 2012), Bulgaria currently has some 119 species, of which 34 are of alien origin (Tomov *et al.,* 2009). Some of these families are poorly represented, such as the Asterolecaniidae 2 species, Cerococcidae 1, Kermesidae 3, Matsucoccidae 2, Monophlebidae 2 and Ortheziidae with 2 species. The most speciose families are the Diaspididae with 40, the Pseudococcidae with 29 and the Coccidae with 28 species. The Eriococcidae is represented by 12 species.

Using all literary sources, we have increased the number of species found in Bulgaria to 145 in 11 families and 65 genera. Thirty-eight of these are of alien origin. The number of species now known in each family is as follows: Diaspididae 48, Pseudococcidae 33, Coccidae 33, Eriococcidae 13, Asterolecaniidae 6, Kermesidae 4, Ortheziidae 3, Matsucoccidae 2, Cerococcidae 1, Monophlebidae 1 and Putoidae 1 species (Table 1). The previously unrecorded species listed here are taken from unreferenced text sources and so have not been included in ScaleNet.

In the discussion below, all species believed to be alian to Bulgaria are in bold.

Ortheziidae: *Insignorthezia insignis*, *Newsteadia floccosa, Orthezia urticae.* None are known to cause damage.

Matsucoccidae: *Matsucoccus feytaudi* and *Matsucoccus pini,* both on *Pinus nigra*. None are known to cause damage.

Monophlebidae: *Icerya purchasi.* This species has been found only on ornamental plants in greenhouses, botanic gardens and private collections. It is not believed to be a danger to decorative plants in urban zones, because of the low temperatures during winter months. However, it is considered that *I. purchasi* could be a potential threat if the climate changes.

Pseudococcidae: 33 species in 16 genera. The number of species in each genus is *Phenacoccus* 5, *Pseudococcus* 4, *Trionymus* 4, *Planococcus* 3, and *Atrococcus, Balanococcus*, *Spilococcus, Peliococcus, Rhizoecus* all with 2 species, and *Coccura, Heliococcus, Mirococcus, Nipaecoccus, Volvicoccus, Ceroputo* and *Vryburgia* with 1 each. Of these, 7 are considered to be of foreign and were collected in association with decorative plants. Of these, *Pseudococcus calceolariae* was found on *Catalpa bignonioides* and *Cercis siliquastrum* in Sozopol in the open, where it overwintered apparently without difficulty. Until now, it was considered that this species couldn't overwinter outside in Bulgaria. There is very little data on the other introduced species (namely *Nipaecoccus nipae*, *Planococcus citri*, *Pseudococcus longispinus*, *Pseudococcus viburni*, *Spilococcus mamillariae* and *Vryburgia amaryllidis*). These species were found in the open only during the warmer months and only in cultivation facilities (i.e under glass) and in private collections.

Some of the species belonging to *Phenacoccus, Pseudococcus* and *Ceroputo* are considered to be of economic importance. *Phenacoccus aceris* is a pest of *Malus domestica, Prunus persica, Prunus armeniaca, Prunus avium, Cydonia oblonga* and *Mespilus* sp. (Lazarov & Grigorov, 1960; Grigorov, 1976), particularly in Kyustendil and Sofia regions. However, little is known about its biology in Bulgaria. *Pseudococcus maritimus* was established on *Morus* sp. and *Solanum tuberosum* (Tsalev, 1968). *Ceroputo,* represented by *C. pilosellae,* has been found on *Fragaria* sp. (Staneva, 2003). There is no data for this species regarding its distribution and biology in Bulgaria.

Eriococcidae: 13 species belonging to 4 genera, of which 10 species are in the genus *Eriococcus*. Of the other genera, *Acanthococcus* only has *A. aceris* found on *Acer* sp. (Tsalev, 1968) and *Quercus* sp. (Gavrilov, 2010); *Cryptococcus* is only represented by *C. fagisuga* on *Fagus* sp. (Tsalev, 1968) and the only recorded species of *Pseudochermes*, *P. fraxini*, is only known off *Fraxinus* sp. (Chorbadjiev, 1938) and *Fraxinus excelsior* (Tsalev, 1968; Kozar *et al.,*1979). There appear to be no species of foreign origin and none are considered to be pests of agricultural crops or decorative plants. Most species

Table 1. Annotated list of scale insect species established in bulgaria, with validation source

Family/Species	**Validation source**
Fam. Ortheziidae	
Insignorthezia insignis (Browne) *	Tsalev, 1968
Newsteadia floccosa (De Geer)	Tsalev, 1968
Orthezia urticae (Linnaeus)	Tsalev, 1968; Kozar *et al.,*1979; Gavrilov, 2010
Fam. Monophlebidae	
Icerya purchasi Maskell*	Tsalev, 1968; Pencheva, 2007; Trencheva *et al*., 2010
Fam. Pseudococcidae	
Atrococcus achilleae (Kiritschenko)	Gavrilov, 2010
Atrococcus paludinus (Green)	Gavrilov, 2010; Trencheva *et al.,* 2012
Balanococcus balkanicus Gavrilov	Gavrilov, 2010
Balanococcus boratynskii Williams	Gavrilov, 2010
Coccura comari (Kunow)	Gavrilov, 2010
Heliococcus destructor Borchsenius	Gavrilov, 2010
Mirococcus sp.	Kozar *et al.,* 1979
Nipaecoccus nipae (Maskell)*	Pencheva, 2007
Peliococcus balteatus (Green)	Gavrilov, 2010
Peliococcus marrubii (Kiritchenko)	Kozar *et al.,*1979
Phenacoccus aceris (Signoret)	Lazarov & Grigorov, 1960; Tsalev, 1968; Grigorov, 1976
Phenacoccus alibotush Gavrilov	Gavrilov, 2010
Phenacoccus piceae (Loew)	Tsalev, 1968
Phenacoccus pumilus Kiritschenko	Gavrilov, 2010
Phenacoccus sp.	Kozar *et al.,*1979
Planococcus ficus (Signoret)	Pencheva, 2007
Planococcus citri (Risso)*	Chorbadjiev, 1938; Tsalev, 1968; Pencheva, 1995; Trencheva *et al.,*2010
Planococcus vovae (Nasonov)	Tsalev, 1968; Trencheva *et al.,*2012
Pseudococcus calceolariae (Maskell)*	Tsalev, 1968; Pencheva, 1995; Trencheva *et al.,*2012
Pseudococcus longispinus (Targioni Tozzetti)*	Tsalev, 1968; Kozar *et al.,* 1979; Pencheva, 1995; Trencheva *et al.,* 2010
Pseudococcus maritimus (Ehrhorn)	Tsalev, 1968
Pseudococcus viburni (Signoret)*	Kozar *et al.,* 1979; Pencheva, 1995
Ceroputo pilosellae (Sulc)	Kozar *et al.,* 1979; Staneva, 2003
Rhizoecus falcifer Kunckel d'Herculais	Pencheva, 2004; Pencheva, 2007
Rhizoecus halophilus (Hardy)	Gavrilov, 2010
Spilococcus halli (McKenzie & Williams)	Danzig, 1998
Spilococcus mamillariae (Bouche)*	Pencheva & Gerasimova, 2006; Pencheva, 2007
Trionymus aberrans Goux	Kozar, 1985
Trionymus perrisii (Signoret)	Kozar *et al.,* 1979
Trionymus radicum (Newstead)	Gavrilov, 2010
Trionymus sp.	Kozar *et al.,* 1979
Volvicoccus stipae (Borchsenius)	Kozar *et al.,* 1979
Vryburgia amaryllidis (Bouché)*	Tsalev, 1968
Fam.Eriococcidae	
Acanthococcus aceris Signoret	Tsalev, 1968; Gavrilov, 2010
Cryptococcus fagisuga Lindinger	Tsalev, 1968
Eriococcus sp.	Trencheva *et al.,* 2009
Eriococcus agropyri (Borchsenius)	Tsalev, 1968
Eriococcus buxi (Boyer de Fonscolombe)	Tsalev, 1968

Table 1. Continued

Family/Species	Validation source
Eriococcus cynodontis Kiritchenko	Tsalev, 1968
Eriococcus gouxi (Balachowsky)	Kosztarab & Kozar, 1988
Eriococcus insignis Newstead	Gavrilov, 2010
Eriococcus melnikensis Hodgson & Trencheva	Hodgson & Trencheva, 2008
Eriococcus munroi (Boratynski)	Kozar *et al.,* 1979
Eriococcus pseudinsignis Green	Kosztrab & Kozar, 1988
Eriococcus spurius (Modeer)	Chorbadjiev, 1938; Tsalev, 1968; Kozar *et al.,* 1979
Pseudochermes fraxini (Kaltenbach)	Chorbadjiev, 1938; Tsalev, 1968; Kozar *et al.,* 1979
Fam. Kermesidae	
Kermes gibbosus Signoret	Tsalev, 1968; Trencheva *et al.,* 2009; Gavrilov, 2010
Kermes quercus (Linnaeus)	Tsalev, 1968
Kermes nakagawae Kuwana	Tsalev, 1968
Kermes roboris (Fourcroy)	Tsalev, 1968; Trencheva *et al.,* 2009; Gavrilov, 2010
Fam. Asterolecaniidae	
Asterodiaspis bella (Russell)	Kozar *et al.,* 1979
Asterodiaspis quercicola (Bouche)	Kozar *et al.,* 1979
Asterodiaspis repugnans (Russell)	Trencheva *et al.,* 2009
Asterodiaspis roboris (Russell)	Kozar *et al.,* 1979
Asterodiaspis variolosa (Ratzeburg)	Tsalev & Vulcheva, 1963; Tsalev, 1968
Planchonia arabidis Signoret	Tsalev, 1968; Kozar *et al.,*1979; Trencheva *et al.,* 2012
Fam. Coccidae	
Ceroplastes japonicus Green*	Pencheva, 2007; Trencheva *et al.,* 2010
Coccus hesperidum Linnaeus*	Buresh & Lazarov, 1956; Tsalev, 1968; Kozar *et al.,* 1979; Pencheva, 1995; Trencheva *et al.,* 2010
Eriopeltis lichtensteini Signoret	Tsalev, 1968
Eriopeltis festucae (Boyer de Fonscolombe)	Kozar, 1985
Eucalymnatus tessellatus (Signoret)*	Tsalev, 1968; Pencheva, 1995
Eulecanium ciliatum (Douglas)	Tsalev, 1968; Trencheva *et al.,*2009
Eulecanium franconicum (Lindinger)	Tsalev, 1968
Eulecanium sericeum	Ruskov, 1928; Buresh & Lazarov, 1956
Eulecanium tiliae (Linnaeus)	Buresh & Lazarov, 1956; Chorbadjiev, 1938; Tsalev, 1968; Grigorov, 1976; Kozar *et al.,* 1979; Trencheva *et al.,* 2009
Lecanopsis sp.	Kozar *et al.,* 1979
Lecanopsis clodiensis (Pellizzari)	Gavrilov, 2010
Lecanopsis subterranea (Gomez-Menor Ortega)	Kozar, 1985
Lichtensia viburni Signoret	Pencheva & Draganova, 2000
Luzulaspis luzulae (Dufour)	Tsalev, 1968; Gavrilov, 2010
Luzulaspis nemorosa Koteja	Kozar *et al.,* 1979
Palaeolecanium bituberculatum (Signoret)	Tsalev & Vulcheva, 1963a; Tsalev, 1968; Grigorov, 1976
Parafairmairia bipartita (Signoret)	Kozar *et al.,*1979
Parthenolecanium corni (Bouche)	Chorbadjiev, 1938; Buresh & Lazarov, 1956 Tsalev, 1968; Nikolova, 1969; Grigorov, 1976; Kozar *et al.,* 1979
Parthenolecanium fletcheri (Cockerell)*	Tsalev, 1968; Trencheva *et al.,* 2009
Parthenolecanium persicae (Fabricius)	Chorbadjiev, 1938; Buresh & Lazarov, 1956; Tsalev, 1968; Grigorov, 1976; Trencheva *et al.* 2012

Table 1. Continued

Family/Species	Validation source
Parthenolecanium pomeranicum (Kawecki)	Tsalev, 1968
Parthenolecanium rufulum (Cockerell)	Chorbadjiev, 1938; Buresh & Lazarov, 1956; Tsalev & Vulcheva, 1965; Tsalev, 1968; Trencheva *et al.,* 2009
Phyllostroma myrtilli (Kaltenbach)	Gavrilov, 2010;
Physokermes hemicryphus (Dalman)	Kozar *et al.,* 1979; Gavrilov, 2010
Physokermes piceae (Schrank)	Tsalev, 1968
Poaspis jahandiezi (Balachowsky)	Tsalev, 1968
Pulvinaria vitis (Linnaeus)	Chorbadjiev, 1938; Buresh & Lazarov, 1956; Tsalev, 1968; Grigorov, 1976
Pulvinaria floccifera (Westwood)*	Pencheva, 1995a
Pulvinaria hydrangeae Steinweden*	Trencheva *et al.,* 2012
Rhodococcus perornatus (Cockerell & Parrott)	Chorbadjiev, 1938; Buresh & Lazarov, 1956; Tsalev, 1966; 1968; Nikolova, 1969
Saissetia coffeae (Walker)*	Chorbadjiev, 1938; Tsalev, 1968; Kozar *et al.,* 1979; Pencheva, 1995; Trencheva *et al.,* 2010
Saissetia oleae (Olivier) *	Kozar *et al.,* 1979; Pencheva, 1995; Trencheva *et al.,* 2010
Sphaerolecanium prunastri (Boyer de Fonscolombe)	Chorbadjiev, 1938; Buresh &Lazarov, 1956; Tsalev, 1968; Grigorov, 1976; Kozar *et al.,* 1979
Fam. Diaspididae	
Acanthomytilus jablonowskii Kozar & Matile-Ferrero	Kozar & Nagy, 1998
Abgrallaspis cyanophylli (Signoret)*	Tsalev, 1964; 1968; Pencheva, 1995
Aonidia lauri (Bouche)	Tsalev, 1968; Pencheva, 1995
Aspidiotus nerii Bouche*	Buresh & Lazarov, 1956; Tsalev, 1968; Pencheva, 1995; Trencheva *et al.,* 2010
Aulacaspis rosae (Bouche)	Chorbadjiev, 1938; Buresh & Lazarov, 1956; Tsalev, 1968; Kozar *et al.,*1979; Trencheva *et al.,* 2010; Trencheva *et al.,* 2012
Aulacaspis yasumatsui Takagi*	Trencheva *et al.,*2010
Carulaspis juniperi (Bouche)	Kozar *et al.,* 1979; Staneva, 2003
Carulaspis minima (Signoret)	Kozar *et al.,* 1979; Staneva, 2003
Carulaspis visci (Schrank)	Stanev, 1965; Tsalev, 1968
Chionaspis salicis (Linnaeus)	Chorbadjiev, 1938; Buresh & Lazarov, 1956; Kozar *et al.,* 1979; Tsalev, 1968
Chrysomphalus aonidum (Linnaeus)*	Chorbadjiev, 1938; Pencheva, 1995; Trencheva *et al.,* 2010
Chrysomphalus dictyospermi (Morgan)*	Tsalev, 1964, 1968; Pencheva, 1995
Diaspidiotus gigas (Thiem & Gerneck)	Tsalev, 1968; Kozar *et al.,* 1979
Diaspidiotus lenticularis (Lindinger)	Kozar *et al.,*1979; Staneva, 2003
Diaspidiotus marani (Zahradnik)	Stanev, 1964; Tsalev, 1968; Kozar *et al.,* 1979; Staneva, 2003
Diaspidiotus osborni (Newell & Cockerell)*	Kozar *et al.,*1979
Diaspidiotus ostreaeformis (Curtis)	Chorbadjiev, 1938; Lazarov, 1940; Buresh & Lazarov, 1956; Tsalev, 1968; Grigorov, 1976; Kozar *et al.,* 1979
Diaspidiotus perniciosus (Comstock)*	Stanev, 1963; Tsalev, 1968; Trencheva *et al.,* 2010; Trencheva *et al.,* 2012
Diaspidiotus pyri (Lichtenstein)	Lazarov, 1940; Buresh & Lazarov, 1956; Tsalev, 1968; Grigorov, 1976
Diaspidiotus wuenni (Lindinger)	Stanev, 1964; Tsalev, 1968
Diaspidiotus zonatus (Frauenfeld)	Stanev, 1964; Tsalev, 1968
Diaspis boisduvalii Signoret*	Tsalev, 1964; 1968
Diaspis bromeliae (Kerner)*	Tsalev, 1964; 1968

Table 1. Continued

Family/Species	Validation source
Dynaspidiotus abietis (Schrank)	Tsalev, 1968
Epidiaspis leperii (Signoret)	Chorbadjiev, 1938 ; Lazarov, 1940; Buresh & Lazarov,1956; Grigorov, 1976; Kozar *et al.,* 1979
Gymnaspis aechmeae Newstead*	Tsalev, 1964; 1968; Pencheva, 1995
Hemiberlesia lataniae (Signoret)*	Tsalev, 1964; 1968; Pencheva, 1995
Hemiberlesia rapax (Comstock)*	Tsalev, 1964; 1968; Pencheva, 1995
Lepidosaphes beckii (Newman)*	Chorbadjiev, 1938
Lepidosaphes granati Koroneos	Tsalev, 1968
Lepidosaphes juniperi Lindinger	Tsalev, 1968; Staneva, 2003
Lepidosaphes malicola Borchsenius	Trenchev, 1987
Lepidosaphes newsteadi (Sulc)	Tsalev, 1968
Lepidosaphes conchiformis (Gmelin)	Buresh & Lazarov, 1956; Tsalev, 1968
Lepidosaphes ulmi (Linnaeus)	Chorbadjiev, 1938; Buresh & Lazarov, 1956; Tsalev, 1968; Grigorov, 1976; Trencheva *et al.,* 2009
Leucaspis lowi Colvee	Chorbadjiev, 1938; Tsalev, 1968; Kozar *et al.,* 1979; Pencheva, 2000
Leucaspis pini (Hartig)	Buresh & Lazarov, 1956; Tsalev, 1968; Pencheva, 2000
Leucaspis pusilla Low	Tsalev, 1968; Pencheva, 2000
Parlatoria oleae (Colvee)*	Lazarov, 1940; Tsalev, 1968; Grigorov, 1976; Kozar *et al.,* 1979; Trencheva *et al.,* 2010
Parlatoria parlatoriae (Sulc)	Tsalev, 1968
Parlatoria pergandii Comstock*	Tsalev, 1964; Tsalev, 1968; Pencheva, 1995
Parlatoria proteus (Curtis)*	Tsalev,1964; 1968; Pencheva, 1995
Parlatoria ziziphi (Lucas)*	Chorbadjiev, 1938
Pinnaspis strachani (Cooley)*	Pencheva, 2007
Pinnaspis aspidistrae (Signoret)*	Tsalev, 1964; 1968; Pencheva, 1995
Pseudaulacaspis pentagona (Targioni Tozzetti)*	Tsalev, 1968; Staneva, 1989; Staneva, 1992; Trencheva *et al.,* 2010
Targionia vitis (Signoret)	Stanev, 1964; Tsalev, 1968; Kozar *et al.,* 1979 ; Trencheva *et al.,* 2009
Unaspis euonymi (Comstock)*	Chorbadjiev, 1938; Buresh & Lazarov, 1956; Tsalev, 1968; Kozar *et al.,* 1979 ; Trencheva *et al.,* 2010
Fam. Matsucoccidae	
Matsucoccus feytaudi Ducasse	Kozar *et al.,* 1979
Matsucoccus pini Green	Foldi, 2005
Fam. Cerococcidae	
Cerococcus cycliger Goux	Kozar *et al.,*1979
Fam. Putoidae	
Puto superbus (Leonardi)	Tsalev, 1968; Kozar *et al.,* 1979; Gavrilov, 2010

*species with alien origin according to Pellizzari & Germain (2010).

are found on forestry trees, such as species of *Acer*, *Quercus*, *Fagus*, *Ulmus* and *Fraxinus* (Table 1).

Kermesidae: 4 species, all in *Kermes – Kermes gibbosus, K. quercus, K. nakagawae* and *K. roboris,* all only known on the genus *Quercus*. These species are considered to be indigenous and appear to cause no damage to their tree hosts.

Asterolecaniidae: 6 species in the genera *Asterodiaspis* and *Planchonia*. *A. bella, A. quercicola, A. roboris, A. variolosa* and *A. repugnans* appear to be restricted to oaks (*Quercus* spp), while *Planchonia arabidis* is only known off *Hedera helix* (table. 1). These species are believed to be indigenous and are not thought to damage their host plants.

Cerococcidae: only *Cerococcus cycliger* found on *Thymus pulegioides*.

Coccidae: 33 species belonging to 18 genera. *Parthenolecanium* has 5 species, *Eulecanium* 4 and *Pulvinaria* and *Lecanopsis* have 3 species. Eight species are believed to be of foreign origin, all found in association with decorative plants: *Ceroplastes japonicus***,** *Coccus hesperidum***,** *Eucalymnatus tessellatus***,** *Pulvinaria floccifera***,** *Saissetia coffeae* and *Saissetia oleae.* They can all develop throughout the year under cultivation facilities. *Pulvinaria hydrangeae* (recorded for the first time in Bulgaria in 2010 on *Tilia* sp. in Sofia) and *Parthenolecanim fletcheri* are able to overwinter outside.

Some Coccidae are serious pests of fruit, namely *Eulecanium mali, E. tiliae, Palaeolecanium bituberculatum, Parthenolecanium corni*, *P. persicae* and *Sphaerolecanium prunastri.* Other species, such as *Lecanopsis clodiensis* and *Lecanopsis subterranea* appear to be restricted to grasses, whilst *Parthenolecanium rufulum, P. fletcheri* and *P. pomeranicum* develop only on such forest trees as *Quercus*, *Ulmus* and *Taxus* species.

Diaspididae: 48 species belonging to 21 genera. The largest genera are *Diaspidiotus* 9 species, and *Lepidosaphes* and *Parlatoria* with 7 and 5 species respectively. Nine diaspidid species are serious pests of *Malus, Prunus, Pyrus, Cydonia, Morus* fruit trees – *Diaspidiotus ostreaeformis, D. perniciosus, D. pyri, D. marani, Epidiaspis leperii, Lepidosaphes ulmi, L. malicola, Parlatoria* ***oleae*** and *Pseudaulacaspis pentagona*. Twenty one species of diaspidid are believed to be of foreign origin, most of them in association with decorative plants, plus *Diaspidiotus osborni* on *Platanus orientalis* (Kozar *et al*., 1979). The remaining species (*Abgrallaspis cyanophylli, Aspidiotus nerii, Aulacaspis yasumatsui, Chrysomphalus aonidum, C. dictyospermi, Diaspis boisduvalii, D. bromeliae, Gymnaspis aechmeae, Hemiberlesia lataniae, H. rapax, Parlatoria pergandii, P. ziziphi, P. proteus, Pinnaspis aspidistrae, P. strachani and Lepidosaphes beckii*) are serious pests in cultivation facilities and in private collections, where they can develop all the year round but are not thought to be able to overwinter outside.

Some *Carulaspis* species, notably *C. juniperi, C. minima* and *C. visci*, are closely associatied with species of *Juniperus, Thuja, Cupressus* and *Taxus* and cause unsightly damage to their hosts and may even kill them. *Leucaspis* spp., notably *L. lowi, L. pini* and *L. pusilla*, are mainly restricted to *Pinus* spp., whilst *Diaspidiotus wuenni, D. zonatus* and *Targionia vitis* are restricted to oaks (*Quercus* spp).

Unaspis euonymi is mainly found on *Euonymus* species which it frequently kills, and *Acanthomytilus jablonowskii* is restricted to Poaceae.

Putoidae: only *Puto superbus* found on *Plantago carinata, Rumex acetosella, Agrostis vulgaris*, *Euphorbia cyparissias, Hieracium hoppeanum, Agropyrum* sp., *Dianthus* sp., *Andropogon ischaemum, Dactylis* sp.

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