

# First Records of Coccoomorpha (Hemiptera) Species in Diyarbakır, Turkey<sup>1</sup>

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**Abstract** Plants in gardens and parks within Diyarbakır Province (Bağlar, Kayapınar, Sur, and Yenişehir) of Turkey were sampled throughout the years of 2016 and 2017. These collections yielded 10 species from the superfamily Coccoidea (Hemiptera: Coccoomorpha) including 3 species from the family Coccidae (*Parthenolecanium corni* [Bouché], *Didesmococcus unifasciatus* [Archangelskaya], *Sphaerolecanium prunastri* [Boyer de Fonscolombe]), 5 species from the family Diaspididae (*Leucaspis pusilla* [Löw], *Pseudaulacaspis pentagona* [Targion-Tozzetti], *Mercetaspis halli* [Green], *Salicicola kermanensis* [Lindinger], *Parlatoria oleae* [Colvée]), and 1 species each from family Eriococcidae (*Gossyparia spuria* [Modeer]) and family Pseudococcidae (*Planococcus vovae* [Nasonov]). The diaspids *L. pusilla*, *Pseudaulacaspis pentagona*, and *Salicicola kermanensis*; the eriococcid *G. spuria*; and the pseudococcid *Planococcus vovae* represent the first records for the Diyarbakır Province insect fauna.

**Key Words** Coccoomorpha, Coccoidea, first report, Diyarbakır

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There are more than 7,800 species of scale insects (Hemiptera: Coccoidea). Ben-Dov et al. (2019) have provided a recent summary of information on scale insects representing 49 taxonomic families. We conducted the study reported herein for the purpose of identifying the scale insect species in various park and garden areas of Diyarbakır Province in Turkey. A secondary objective was to determine the distribution, host plant species, and possible damage of those species identified.

## Materials and Methods

Sampling sites were randomly selected from various parks and gardens in the districts of Bağlar, Kayapınar, Sur, and Yenişehir of Diyarbakır Province in Turkey. Each site was sampled weekly during the spring and autumn seasons and monthly during the summer and winter seasons of 2016 and 2017. During each sampling, the foliage, branches, trunks, and roots of plants were examined for scale insects. Those plant structures with scale insects were removed, placed in paper bags, properly labeled, and transported to the laboratory.

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Once in the laboratory, insects were prepared for examination and identification using the Wilkey preparation method described by Kosztarab and Kozar (1988) with some modifications when necessary. Live specimens were placed in 70% ethyl alcohol for 2 h prior to emersion in 10% potassium hydroxide (KOH) for 10–15 min at 150–200°C. Nonliving specimens were placed directly in the 10% KOH. To assist in the clearing process, scales were pierced with an insect needle and gently pressed with a spatula to force fluids from within the scales. This was repeated until individual specimens were transparent, after which they were transferred to 70% ethyl alcohol for 10–15 min. Specimens were then immersed in Essing's Aphid Liquid containing a dye and heated for 20–30 min at 40–45°C, after which they were placed in 70% ethyl alcohol for 10 min, then in clove oil for 10–15 min. Finally, specimens were transferred to a drop of Canadian balsam on drop slides under a binocular microscope and covered with a coverslip. These were allowed to dry for 2 wk at 40°C, then transparent nail polish was applied to the edges of the coverslip.

Specimens were identified and verified by M. Bora Kaydan of Çukurova University, İmamoğlu Vocational School (Adana, İmamoğlu). Representative samples of each species identified are deposited at Çukurova University, İmamoğlu Vocational School (Adana, İmamoğlu).

## Results

Sampling these various garden and park sites in the Diyarbakır districts in 2016–2017 yielded 10 species representing four taxonomic families of the superfamily Coccoidea. A listing of those species along with information on date and locale of collection and host plants follows herein.

### Family Coccoidae (3 species)

***Didesmococcus unifasciatus* (Archangelskaya).** This species is previously reported from Afghanistan, Armenia, China, Iran, Lebanon, Mongolia, Tajikistan, and Turkmenistan (Kaydan et al. 2009, Kazem 1985) on host plants *Amygdalus* sp., *Amygdalus communis* L., *Amygdalus nana* L., *Amygdalus pedunculata* Pallas, *Armeniaca* sp., *Ficus carica* L., *Malus domestica* Borkhausen, *Persica concolor* Miller, *Persica vulgaris* Miller, *Prunus* sp., *Prunus dulcis* (Miller), *Prunus prostrata* Labillardière, and *Ulmus* sp. (Ben-Dov et al. 2009). In Turkey, it is previously reported in Hakkâri and Diyarbakır provinces (Bolu 2012; Kaydan et al. 2009, 2013) on host plants *Prunus persica* (L.) (Kaydan et al. 2009) and *Amygdalus communis* (Bolu 2012). Our collections in our current study in Diyarbakır yielded the following from the Sur district:

- 11 May 2016 on *Prunus persica* (3♀ ♀) (N 37°55'44", E 40°15'64", 737 m),
- 21 May 2017 on *Amygdalus communis* (2♀ ♀) (N 38°09'08", E 40°32'96", 984 m),
- 06 May 2017 on *Prunus persica* (3♀ ♀) (N 37°53'76" E, 40°16'48", 732 m), and
- 07 March 2017 on *Amygdalus communis* (2♀ ♀) (N 37°55'56" E 40°16'98", 735 m).

***Parthenolecanium corni* (Bouché).** This species is widely distributed in the world with reports from New Zealand, the United States of America, Canada,

Mexico (Nearctic), Argentina, northern Africa, Brazil, Chile (neotropical), China, France, Pakistan (Oriental), Germany, Australia, Azerbaijan, Bulgaria, Armenia, Algeria, Czech Republic, Denmark, Eastern Mediterranean, France, South Korea, Georgia, Netherlands, India, United Kingdom, Iran, Israel, Switzerland, Spain, Italy, Japan, Canary Islands, Kazakhstan, Kyrgyzstan, Libya, Lebanon, Hungary, Moldova, Malta, Egypt, Uzbekistan, Pakistan, Poland, Portugal, Romania, Russia, Tajikistan, Turkey, Turkmenistan, Ukraine, Yugoslavia, and Greece (Palearctic) (Demirözer 2004, Kaydan et al. 2009, Önder et al. 2011). In Turkey it is previously reported from Ağrı, Ankara, Afyon, Artvin, Bartın, Bayburt, Bolu, Bitlis, Burdur, Çankırı, Diyarbakır, Denizli, Elazığ, Erzurum, Erzincan, Giresun, Hakkâri, Iğdır, Isparta, İzmir, İstanbul, İzmit, Kastamonu, Kahramanmaraş, Niğde, Ordu, Rize, Samsun, Trabzon, Van, and Zonguldak (Ayaz et al. 2015; Çanakçıoğlu 1977; Demirözer 2004; Gül-Zümreoğlu 1972; Kaydan et al. 2007, 2009, 2013, 2014; Önder et al. 2011; Ülgentürk et al. 2008). Previously reported host plants include *Quercus* sp., *Prunus* sp., *Prunus domestica* L., *Prunus cerasus* L., *Pyrus malus* L., *Ulmus* sp., *Morus* sp., *Mespilus germanica* L., *Vitis vitifolia* L., *Cydonia oblonga* Miller, *Juglans regia* L., *Corylus* sp. (Toros 2002); *Acer negundo* L., *Albizia julibrissia* Durazzini, *Cercis siliquastrum* L., *Cornus* sp., *Crateagus* sp., *Cryslus avellana* L., *Cydonia oblonga* Miller, *Eleagnus angustifolia* L., *Fraxinus excelsior* L., *Malus floribunda* L., *Phylleria* sp., *Robinia pseudoacacia* L., *Viburnum tinus* L. (Ülgentürk et al. 2008); *Acer negundo*, *Fraxinus excelsior* L., *Juglans regia*, *Morus* sp., *M. alba* L., *Malus communis* L., *Platanus orientalis* L., *Platanus armeniaca* L., *Prunus avium* L., *Prunus domestica*, *Prunus dulcis*, *Prunus spinose* L., *Pyrus communis* L., *Rhus* sp., *Robinia pseudoacacia*, *Salix* sp., *Ulmus* sp., *Ulmus glabra*, *Vitis vinifera* (Kaydan et al. 2009); *Elaeagnus* sp., *Morus alba*, *Prunus armeniaca*, *Prunus persicae*, *Robinia pseudoacacia*, *Vitis vinifera*, (Kaydan et al. 2013); *Prunus* sp., and *Morus alba* (Kaydan et al. 2014). Our collections in our current study in Diyarbakir yielded the following:

#### Sur District

- 05 April 2016 on *Amygdalus communis* (1 ♀) (N 37°55'32", E 40°16'08", 744 m),
  - 19 April 2016 on *Acer* sp. (3 ♀ ♀) (N 37°55'32", E 40°16'08", 744 m),
  - 24 April 2016 on *Prunus armeniaca* (3 ♀ ♀) (N 38°09'52", E 40°32'72", 984 m),
  - 24 April 2016 on *Prunus domestica* (1 ♀) (N 37°56'28", E 40°12'72", 741 m),
  - 24 April 2016 on *Acer* sp. (2 ♀ ♀) (N 37°56'28", E 40°12'72", 741 m),
  - 24 April 2016 on *Morus* sp. (3 ♀ ♀) (N 37°56'28", E 40°12'72", 741 m),
  - 24 April 2016 on *Juglans regia* (3 ♀ ♀) (N 37°56'28", E 40°12'72", 741 m),
  - 24 April 2016 on *Cydonia oblonga* (2 ♀ ♀) (N 37°56'28", E 40°12'72", 741 m),
  - 26 April 2016 on *Platanus orientalis* (3 ♀ ♀) (N 37°53'88", E 40°16'48", 732 m),
  - 04 May 2016 on *Pyracantha coccinea* M. Roemer (3 ♀ ♀) (N 37°53'88" E 40°16'48", 732 m),
  - 04 May 2016 on *Gleditsia triacanthos* L. (3 ♀ ♀) (N 37°53'88", E 40°16'48", 732 m),
  - 04 May 2016 on *Tilia* sp. (3 ♀ ♀) (N 37°53'16", E 40°16'84", 732 m),
  - 04 May 2016 on *Robinia pseudoacacia* (2 ♀ ♀) (N 37°53'88", E 40°16'48", 732 m), and
  - 27 May 2016 on *Rosa* sp. (1 ♀) (N 37°53'16", E 40°16'84", 732 m);
- Bağlar District

06 April 2016 on *Prunus cerasifera* Ehrhart (1 ♀) (N 37°55'76", E 40°11'24", 743 m),

18 May 2016 on *Thuja occidentalis* L. (3 ♀ ♀) (N 37°55'64", E 40°11'36", 743 m),

18 May 2016 on *Acer* sp. (3 ♀ ♀) (N 37°55'76", E 40°11'24", 743 m);

Kayapınar District

01 May 2016 on *Vitis vinifera* L. (3 ♀ ♀) (N 37°56'04", E 40°11'42", 745 m),

18 May 2016 on *Ulmus* sp. (1 ♀) (N 37°57'36", E 39°55'94", 790 m),

18 May 2016 on *Morus* sp. (3 ♀ ♀) (N 37°57'36", E 39°55'94", 790 m),

18 May 2016 on *Prunus domestica* (3 ♀ ♀) (N 37°57'36", E 39°55'94", 790 m),

18 May 2016 on *Prunus cerasifera* (1 ♀ ♀) (N 37°53'88", E 40°16'48", 732 m), and

05 October 2016 on *Prunus cerasifera* (3 ♀ ♀) (N 37°55'04", E 40°10'12", 743 m);

Yenişehir District

06 March 2016 on *Acer* sp. (3 ♀ ♀) (N 37°54'96", E 40°13'86", 738 m),

06 April 2016 on *Morus* sp. (3 ♀ ♀) (N 37°54'96", E 40°13'76", 738 m),

13 May 2016 on *Acer* sp. (3 ♀ ♀) (N 37°56'68", E 40°12'72", 743 m),

13 May 2016 on *Cercis siliquastrum* L. (3 ♀ ♀) (N 37°56'28", E 40°12'72", 741 m),

13 May 2016 on *Platanus orientalis* (3 ♀ ♀) (N 37°56'28", E 40°12'72", 741 m),

13 May 2016 on *Pyracantha coccinea* (3 ♀ ♀) (N 37°56'28", E 40°12'72", 741 m),

13 May 2016 on *Morus* sp. (3 ♀ ♀) (N 37°56'28", E 40°12'72", 741 m),

13 May 2016 on *Cydonia oblonga* (2 ♀ ♀) (N 37°56'28", E 40°12'72", 743 m),

13 May 2016 on *Fraxinus* sp. (3 ♀ ♀) (N 37°56'28", E 40°12'72", 741 m), and

05 June 2016 on *Acer* sp. (3 ♀ ♀) (N 37°54'96", E 40°13'76", 738 m).

***Sphaerolecanium prunastri* (Boyer de Fonscolombe).** This species is reported from Austria, Azerbaijan, Bulgaria, Czech Republic, China, France, Germany, Iran, Israel, Italy, Turkey, Poland, Russia, Romania, Uzbekistan, Armenia, Crimea, Lebanon, Moldova, Ukraine, Yugoslavia, Greece, and the United States (Kosztarab and Kozar 1988, Lodos 1986). In Turkey, it is found in Afyon, Ankara, Antalya, Aydın, Balıkesir, Bilecik, Bolu, Bursa, Diyarbakır, Elazığ, Edirne, İstanbul, İzmir, Kastamonu, Kırklareli, Kocaeli, Konya, Malatya, Sakarya, and Tekirdağ (Akşit and Apak 2013; Ayaz et al. 2015; Gül-Zümreoğlu 1972; Kaydan et al. 2013, 2014; Öncüler 1977; Özgen and Bolu 2009; Toros 2002; Ülgentürk et al. 2008). Previously reported host plants include *Prunus armenica*, *Prunus domestica*, *Prunus persicae* (Toros 2002), *Prunus domestica*, *Prunus ceracifera* var. *pissardi nigra*, *Prunus armeniaca*, *Prunus cerasifera* (Ülgentürk et al. 2008); *Prunus armeniaca* (Özgen and Bolu 2009); *Prunus avium*, *Prunus armeniaca*, *Prunus cerasus*, *Prunus cerasifera*, *Prunus domestica*, *Prunus persica*, *Prunus spinosa* (Kaydan et al. 2009); *Prunus cerasifera* (Akşit and Apak 2013); and *Prunus domestica* (Kaydan et al. 2014). Our current study in Diyarbakır yielded only one collection of two specimens:

Sur District

26 April 2016 on *Prunus cerasifera* (2 ♀ ♀) (N 37°53'16", E 40°16'84", 732 m).

### Family Diaspididae (5 species)

***Leucaspis pusilla* Löw.** This species is reported from northern Africa, Argentina, Europe, Austria, Balearic, Bulgaria, France, Spain, Israel, Switzerland, Canary Islands, Cyprus, Crimea, Corsica, Hungary, Madeira Island, Malta, Russia, Portugal, Romania, Sardinia, Sicily, Syria, Turkey, and Greece (Kaydan et al. 2014, Önder et al. 2011, Toros 2002, Yaşar 1995). In Turkey, it is reported from Adana, Adapazarı, Ankara, Antakya, Antalya Aydın, Balıkesir, Bartın, Bilecik, Burdur, Bursa, Çanakkale, Denizli, Edirne, Hatay, Isparta, İstanbul, İzmir, İzmit, Kahramanmaraş, Karabük, Kastamonu, Kocaeli, Manisa, Muğla, Niğde, Osmaniye, Sakarya, Trabzon, Tekirdağ, Toroslar, and Zonguldak (Çanakçıoğlu 1977; Erdem 1968; Gül-Zümreoğlu 1972; Kaydan et al. 2014; Kaymak and Yaşar 2017; Önder et al. 2011; Toros 2002; Ülgentürk et al. 2008, 2012; Yaşar 2016; Yaşar and Küçükçakal 2013). Previously reported host plants include *Cedrus* spp., *Pinus* spp., *Pinus brutia* Tenore (Yaşar 1995); *Pinus nigra* Arnold, *Sophora japonica*, *Morus* sp. (Ülgentürk and Toros 2000); *Pinus* sp., *Pinus nigra* (Toros 2002, Ülgentürk et al. 2008); *Cedrus* spp., *Pinus* sp., *Pinus brutia*, *Pinus halepensis* Miller, *Pinus pinea* L. (Kaydan et al. 2013); *Pinus nigra* (Kaydan et al. 2014, Kaymak and Yaşar 2017). Our survey yielded the following collections of *L. pusilla* by district in Diyarbakır:

#### Sur District

06 April 2016 on *Pinus brutia* (2 ♀ ♀) (N 37°53'34", E 40°16'78", 732 m),  
05 May 2016 on *Pinus brutia* (8 ♀ ♀) (N 37°53'34", E 40°16'78", 732 m), and  
09 May 2017 on *Pinus brutia* (2 ♀ ♀) (N 37°53'04", E 40°16'76", 732 m;

#### Kayapınar District

02 April 2016 on *Pinus brutia* (4 ♀ ♀) (N 37°55'32", E 40°9'92", 744 m);

#### Yenişehir District

05 June 2017 on *Pinus brutia* (2 ♀ ♀) (N 37°56'28", E 40°12'72", 741 m).

***Mercetaspis halli* Green.** *Mercetaspis halli* is reported from the United States, Afghanistan, Azerbaijan, Armenia, Crete, Georgia, Croatia, Iraq, Iran, Israel, Cyprus, Hungary, Egypt, Central Asia, Uzbekistan, Pakistan, Russia, Saudi Arabia, Syria, Tajikistan, Turkey, Turkmenistan, and Greece (Kaydan et al. 2009, Önder et al. 2011). In Turkey, it has been reported from Adana, Ankara, Antalya, Aydın, Bitlis, Diyarbakır, Eskişehir, Elazığ, Gaziantep, Hakkâri, Iğdır, İçel, İzmir, Mardin, Mersin, Muğla, Malatya, Niğde, and Van (Ayaz et al. 2015; Bolu et al. 2006; Çobanoğlu and Düzgüneş 1986; Erler 2004; Gül-Zümreoğlu 1972; Karsavuran et al. 2001; Kaydan et al. 2007, 2009; Önder et al. 2011; Yaşar 1995, 2016). Previously reported host plants include *Astragalus* spp., *Ephedra* spp., *Prunus armeniaca*, *Prunus dulcis*, *Pistacia terebinthus* L. (Yaşar 1995), *Prunus armeniaca*, *Prunus domestica*, *Prunus dulcis*, *Prunus persica* (Kaydan et al. 2009), and *Prunus armeniaca* and *Prunus domestica* (Kaydan et al. 2013). Our collections in our current study in Diyarbakır yielded the following:

#### Sur District

05 April 2016 on *Amygdalus communis* (3 ♀ ♀) (N 37°55'32", E 40°16'08", 734 m),  
19 April 2016 on *Amygdalus communis* (2 ♀ ♀) (N 37°53'08", E 40°16'24", 734 m),

18 May 2016 on *Prunus cerasifera* (4 ♀ ♀) (N 37°55'32", E 40°16'08", 734 m),  
and

18 May 2016 on *Prunus cerasifera* (3 ♀ ♀) (N 37°55'32", E 40°18'08", 734 m);  
Bağlar District

06 April 2016 on *Prunus cerasifera* (3 ♀ ♀) (N 37°55'76", E 40°11'24", 743 m)  
and

18 May 2016 on *Prunus cerasifera* (3 ♀ ♀) (N 37°55'64", E 40°11'36", 743 m).

***Salicicola kermanensis* Lindinger.** *Salicicola kermanensis* is reported from Afghanistan, Armenia, Iran, Iraq, Israel, Morocco, Pakistan, Egypt, Russia, Uzbekistan, Tajikistan, Turkey, Turkmenistan, Yugoslavia, and Greece (Erler and Tunç 1996, Kaydan et al. 2009, Kozár 1998, Önder et al. 2011, Zeki et al. 2004). In Turkey, it is reported from Adana, Ankara, Antakya, Antalya, Ağrı, Afyon, Bitlis, Burdur, Hakkâri, Iğdır, Şanlıurfa, and Van (Erdem 1968; Erler and Tunç 1996, Kaydan et al. 2009; Önder et al. 2011; Toros 2002; Yaşar 1995, 2016; Zeki et al. 2004). Previously reported host plants include *Populus* spp., *Populus alba* L., *Pistacia vera* L. (Yaşar 1995); *Fraxinus* sp., *Populus* sp. (Toros 2002); *Populus* sp., *Prunus nigra*, and *Salix alba* L. (Kaydan et al. 2013). Our study in Diyarbakir yielded two collections of specimens in the Sur district, which represent the first reports of this species in the province:

02 April 2016 on *Salix* sp. (4 ♀ ♀) (N 38°9'08", E 40°32'96", 984 m) and

13 April 2016 on *Salix* sp. (4 ♀ ♀) (N 37°55'32", E 40°16'08", 744 m).

***Parlatoria oleae* Colvée.** This diaspidid has been reported from Afghanistan, Australia, Germany, Belgium, Bulgaria, China, Morocco, France, South Asia, Iraq, Iran, Spain, Italy, Israel, Canary Islands, Malta, Hungary, Egypt, Portugal, Romania, Tunisia, Saudi Arabia, Syria, Yugoslavia, and Russia (Kozár 1998). In Turkey, it is reported from Adana, Antalya, Aydın, Ankara, Artvin, Balıkesir, Bartın, Bilecik, Bitlis, Bolu, Burdur, Bursa, Çanakkale, Denizli, Diyarbakır, Eskişehir, Elazığ, Erzincan, Edirne, Gaziantep, Hakkâri, Hatay, Isparta, Iğdır, İstanbul, İzmir, İçel, Kahramanmaraş, Kastamonu, Kayseri, Kırklareli, Manisa, Mersin, Muğla, Osmangazi, Sakarya, Sinop, Tekirdağ, Trabzon, and Van (Ayaz et al. 2015; Çanakçıoğlu 1977; Erler 1994, 2004; Erözmez and Yaşar 2017; Gül-Zümreoğlu 1972; Kaçar et al. 2012; Kaydan et al. 2009, 2014; Kaymak and Yaşar 2017; Nizamlioğlu 1963; Öncüler 1977; Toros 2002; Ülgentürk et al. 2008; Yaşar and Küçükçakal 2013; Yaşar 2016; Yaşar et al. 2003; Zeki et al. 2004). Previously reported host plants include *Acer negundo*, *Berberis thunbergii* var. *atropurpurea*, *Catalpa bignonioides* Walter, *Chlorophytum comosum* Thunberg, *Eriobotria* spp., *Elaeagnus umbellata* Thunberg, *Olea europea* L., *Fraxinus* spp., *Malus sylvestris* (L.), *Mespilus germanica*, *Nerium oleander* L., *Prunus armeniaca*, *Prunus avium*, *Prunus domestica*, *Prunus dulcis*, *Prunus persica*, *Prunus laurocerasus* L., *Prunus ceracifera* var. *atropurpurea*, *Pistacia terebinthus*, *Pyrus communis*, *Pyrus elaeagrifoliae* Pallas, *Rosa* spp., *Syringa vulgaris* L., *Pyracantha coccinea*, *Ligustrum vulgare* L., *Nandina domestica* Thunberg, *Mahonia aquifolium* (Pursh) Nutt., *Melia azedarach* L. (Yaşar 1995); *Fraxinus* sp. (Toros 2002); *Celtis* sp., *Cornus sanguinea* L., *Prunus persica* (Yaşar et al. 2003); *Prunus cerasifera*, *Prunus domestica*, *Pyrus communis*, *Syringa vulgaris*, *Malus communis*, *Fraxinus* sp., *F. Excelsior* L., *Rosa* sp. (Kaydan et al. 2009); *Morus alba*, *Morus domestica*, *Morus*



*pendula* Fosberg (Ülgentürk et al. 2008); *Olea europaea* (Kaçar et al. 2012); *Eriobotrya* sp., *Fraxinus* sp., *Rosa* sp., *Malus sylvestris*, *Prunus* spp., *Syringa vulgaris* (Kaydan et al. 2013); *Rosa* sp., *Parthenocissus quinquefolia* (L.) Planchon (Yaşar and Küçükçakal 2013); *Malus domestica*, *Robinia pseudoacacia* (Kaydan et al. 2014); *Nerium oleander*, *Pyracantha coccinea*, *Pinus nigra*, *Cotoneaster franchetii* Bois, *Viburnum tinus*, *Yucca filamentosa* L., and *Elaeagnus pungens* Thunberg (Kaymak and Yaşar 2017). We collected specimens of this species on two dates and locations, both from Sur District of Diyarbakır:

21 July 2017 on *Prunus domestica* (4 ♀ ♀) (N 37°53'16", E 40°16'84", 732 m) and

21 July 2017 on *Rosa* sp. (3 ♀ ♀) (N 37°53'76", E 40°16'52", 732 m).

***Pseudaulacaspis pentagona* Targionna-Tozzetti.** This species is previously reported from Germany, Argentina, Austria, Brazil, Bulgaria, China, Czech Republic, France, Croatia, Netherlands, Spain, Switzerland, Sweden, Italy, Canary Islands, Hungary, Madeira, Malaysia, Malya, Norway, Poland, Romania, Sardinia, Sicily, Slovakia, Slovenia, Sri Lanka, Turkey, Ukraine, Uruguay, Russia, Greece, and Yugoslavia (Kozár 1998, Önder et al. 2011). In Turkey, it is reported from Adana, Ankara, Antalya, Akşehir, Aydın, Balıkesir, Bilecik, Bartın, Bursa, Çorum, Eskişehir, Giresun, Hatay, İçel, İstanbul, İzmir, Sultandağ, Kayseri, Kastamonu, Kocaeli, Manisa, Mersin, Ordu, Samsun, Sakarya, Sivas, Rize, Trabzon, and Tekirdağ (Çanakçıolu 1977 ; Çobanoğlu and Düzgüneş 1986; Erler 1994; Erler and Tunç 1996; Erözmen and Yaşar 2017; Güncan and Yoldaş 2011; Karsavuran et al. 2001; Kaydan et al. 2007, 2014; Kaymak and Yaşar 2017; Kozár et al. 1979; Nizamlioğlu 1963; Önder et al. 2011; Toros 2002; Ülgentürk et al. 2008, 2009; Yaşar 2016; Yaşar et al. 1995). Previously reported host plants include *Mespilus germanica*, *Morus alba*, *Prunus avium*, *Prunus dulcis*, *Prunus persica*, *Catalpa bignonioides*, *Melia azedarach*, *Sophora japonica* (L.), *Eriothrina crista-galli* L., *Robinia pseudoacacia*, *Syringa vulgaris* (Yaşar 1995); *Cedrus libani* A. Richard, *Juniperus sabina* var. *tamaricifolia*, *Sophora japonica*, *Catalpa* sp., *Morus* sp., *Populus* sp., *Syringa vulgaris* (Ülgentürk and Toros 2000); *Morus* sp., *Juglans regia*, *Vitis vinifera* (Toros 2002); *Morus alba*, *Prunus domestica* (Ülgentürk et al. 2008); *Actinidia deliciosa* var. *Bruno* (Ülgentürk et al. 2009); *Rosa* sp., *Syringa* sp., *Fraxinus excelsior*, *Morus alba*, *Prunus* sp. (Kaydan et al. 2014); *Juglans regia*, *Morus alba*, *Prunus avium*, *Prunus persica*, and *Cydonia oblonga* (Erözmez and Yaşar 2017). Our collections of *P. pentagona* in the Sur district are the first reports of this species in Diyarbakır Province:

26 April 2016 on *Prunus cerasifera* (5 ♀ ♀) (N 37°53'16", E 40°16'84", 732 m) and

26 April 2016 on *Rosa* sp. (10 ♀ ♀) (N 37°53'64", E 40°16'12", 732 m).

### Family Pseudococcidae (1 species)

***Planococcus vovae* Nasonov.** *Planococcus vovae* is distributed in neotropical, Nearctic, and Palaearctic regions, and in Afghanistan, Germany, Austria, Bulgaria, Czech Republic, Morocco, France, Armenia, Georgia, Crete, Iran, Sweden, Israel, Italy, England, Canary Islands, Cyprus, Corsica, Hungary, Poland, Russia,

Sardinia, Tajikistan, Turkey, Ukraine, and Greece (Kosztarab and Kozar 1988). In Turkey, it is reported from the Marmara region, Central Anatolia, the Black Sea and Mediterranean region, Bartın, Burdur, Kastamonu, Isparta, and Istanbul (Çanakçıoğlu 1977, Kaydan et al. 2014, Ülgentürk et al. 2008, Zeki et al. 2004). Previously reported host plants include *Cupressus* sp., *Juniperus oxycedrus* subsp. *oxycedrus*, *Juniperus* sp. (Kaydan et al. 2009); *Juniperus squamata* var. *bluecarpet*, *Chamecyparia lawsonia* var. *elwadi*, *Cupressus macrocarpa* Hartweg (Ülgentürk et al. 2008); *Cupressus* sp., *Cupressus sempervirens* L., *Cupressus goveniana* (Gordon), *Juniperis excelsa* M. Bieberstein, *Juniperus oxycedrus oxycedrus*, *Laurus nobilis* L., *Libocetrus decurrens* (Torrey), *Taxus baccata* L., *Thuja occidentalis* (Kaydan et al. 2013); *Juniperus communis* L., *Laurus nobilis*, *Thuja* sp. (Kaydan et al. 2014); *Olea europea*, *Malus domestica*, and *Prunus cerasus* L. (Erözmen and Yaşar 2017). We collected it in Diyarbakir as the first record of the occurrence of this species in the province:

#### Sur District

11 August 2016 on *Cupressus* sp. (3 ♀ ♀) (N 37°53'34", E 40°16'78", 732 m),  
07 September 2016 on *Cupressus* sp. (4 ♀ ♀) (N 37°55'44", E 40°15'64", 737 m),

07 September 2016 on *Cupressus* sp. (2 ♀ ♀) (N 37°54'64", E 40°16'64", 735 m), and

03 September 2017 on *Morus* sp. (2 ♀ ♀) (N 37°54'79", E 40°13'32", 740 m);

#### Bağlar District

18 May 2016 on *Thuja occidentalis* (1 ♀ ♀) (N 37°55'96", E 40°11'72", 743 m),

09 July 2016 on *Morus* sp. (N 37°55'48", E 40°11'12", 743 m);

#### Yenişehir District

02 June 2016 on *Pinus* sp. (4 ♀ ♀) (N 37°55'96", E 40°13'76", 02.06.2016, 739 m),

09 July 2017 on *Morus* sp. (2 ♀ ♀) (N 37°54'84", E 40°13'72", 740 m),

13 July 2017 on *Morus* sp. (3 ♀ ♀) (N 37°55'11", E 40°13'44", 740 m),

15 July 2017 on *Morus* sp. (2 ♀ ♀) (N 37°54'04", E 40°13'44", 741 m),

15 July 2017 on *Thuja occidentalis* (4 ♀ ♀) (N 37°54'04", E 40°13'44", 741 m),

15 July 2017 on *Morus* sp. (5 ♀ ♀) (N 37°54'96", E 40°13'88", 740 m),

16 July 2017 on *Morus* sp. (2 ♀ ♀) (N 37°55'44", E 40°13'88", 740 m),

16 July 2017 on *Morus* sp. (N 37°55'16", E 40°13'84", 739 m),

16 July 2017 on *Morus* sp. (4 ♀ ♀) (N 37°55'84", E 40°13'12"),

18 July 2017 on *Morus* sp. (3 ♀ ♀) (N 37°54'48", E 40°13'24"),

12 August 2017 on *Morus* sp. (2 ♀ ♀) (N 37°54'92", E 40°13'58", 740 m), and

12 August 2017 on *Platanus orientalis* (2 ♀ ♀) (N 37°54'92", E 40°13'58", 740 m);

#### Kayapınar District

13 August 2017 on *Thuja occidentalis* (4 ♀ ♀) (N 37°56'54", E 40°10'32", 740 m).

### Family Eriococcidae (1 species)

***Gossyparia spuria* Modeer.** This species is reported from all over Europe, Morocco, the Caucasus, Turkey, Iran, Japan, North America, and Turkey (Lodos 1986). In Turkey, it is reported from the Mediterranean region, Central Anatolia



region, Ağrı, Ankara, Bitlis, Eskişehir, Iğdır, İstanbul, Kastamonu, Niğde, and Van (Karsavuran et al. 2001, Kaydan et al. 2009, Önder et al. 2011). Reported host plants include *Ulmus* sp., *Viscum album* L. (Toros 2002); woodland, grassland, and scrubland (Önder et al. 2011); and *Ulmus* sp. (Kaydan et al. 2009, 2013). Our collection of *G. spuria* in Kayapınar District is the first report of this species in Diyarbakır Province:

10 May 2016 on *Ulmus* sp. (5 ♀ ♀) (N 37°55'64", E:40°10'32", 740 m) and  
18 May 2016 on *Ulmus* sp. (5 ♀ ♀) (N 37°57'36", E 39°55'94", 790 m).

## Discussion

Our survey for Coccoidea scale insects in parks and gardens of the Bağlar, Kayapınar, Yenişehir and Sur districts of Diyarbakır Province in Turkey yielded 10 species representing 4 taxonomic families, (e.g., 5 species of Diaspididae, 3 species of Coccidae, 1 species each of Pseudococcidae and Eriococcidae). Of these 10 species, 5 are new records for the insect fauna of Diyarbakır Province. Those species include *Leucaspis pusilla* (Diaspididae), *Pseudaulacaspis pentagona* (Diaspididae), *Salicicola kermanensis* (Diaspididae), *Planococcus vovae* (Pseudococcidae), and *Gossyparia spuria* (Eriococcidae). Our efforts also discovered *Thuja occidentalis* as a new record of a host plant for *Parthenolecanium corni*, *Prunus cerasifera* for *Mercetaspis halli*, and *Morus* sp. and *Platanus orientalis* for *Planococcus vovae*. Furthermore, we found *Parthenolecanium corni* to be common and often highly dense on a variety of host plants. *Leucaspis pusilla* preferred pine tree hosts in all the districts, while *Planococcus vovae* occurred widely and in high populations on mulberry (*Morus* sp.).

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