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Research Article

Three New *Rhizopulvinaria* Species (Homoptera: Coccoidea: Coccidae) for Scale Insect Fauna of Turkey

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Abstract: Three Rhizopulvinaria species, *Rhizopulvinaria pyrethri* Borchsenius, *Rhizopulvinaria turkestanica* (Archangelskaya), and *Rhizopulvinaria viridis* Borchsenius, were identified on wild flora in eastern Anatolia in 1997. All of them are new records for the Turkish scale insect fauna.

Key Words: Coccoidea, Coccidae, *Rhizopulvinaria*, Scale insect fauna, Turkey

Türkiye Koşnil Faunası İçin Üç Yeni *Rhizopulvinaria* (Homoptera: Coccoidea: Coccidae) Türü

Özet: Doğu Anadolu Bölgesinde 1997 yılında yabani bitki türleri üzerinde 3 Rhizopulvinaria türü: *Rhizopulvinaria pyrethri* Borchsenius, *Rhizopulvinaria turkestanica* (Archangelskaya), ve *Rhizopulvinaria viridis* Borchsenius teşhis edilmiştir. Bu türlerin tamamı Türkiye koşnil faunası için yeni kayıttır.

Anahtar Sözcükler: Coccoidea, Coccidae, *Rhizopulvinaria*, Kabuklubit Koşnil faunası, Türkiye

Introduction

Since Bodenheimer (1,2) the scale insect fauna of Turkey has been studied by several authors (3-9). One hundred and eighty-seven scale insect species have been recorded in the review of Turkey so far (10). In this list only one *Rhizopulvinaria* species, *Rhizopulvinaria artemisia*, is given as a record in Ankara province by Bodenheimer (2). The genus *Rhizopulvinaria* has 33 species worldwide (11), all of which are in the Palearctic region (12).

Van and Ağrı provinces in the eastern Anatolia region are located on high elevations between 1600 and 1800 m. The area has typical dry continental climate with cold and long snowy winters and hot summers. Some studies on Coccoidea fauna were conducted on Diaspidiae (13, 14) and Pseudococcidae (8) in the region. However, the eastern Anatolia region has not been well studied in this respect. Therefore, the aim of our study was to determine the profile of scale insect fauna in the region.

Materials and Methods

The survey studies were conducted in Van and Ağrı provinces in 1997. Specimens were collected randomly especially from wild flora of the area. Parts of dry and mounted material of the scale insects species were deposited at the Plant Protection Department of the Ankara University Agriculture Faculty in Ankara, Turkey.

Results and Discussion

According to survey studies 3 species of *Rhizopulvinaria* genus were identified from Van and Ağrı provinces. All 3 species are new records for the Turkish Coccoidea fauna, namely *Rhizopulvinaria pyrethri* Borchsenius, *Rhizopulvinaria turkestanica* (Archangelskaya), and *Rhizopulvinaria viridis* Borchsenius.

Genus *Rhizopulvinaria* Borchsenius, 1952;

Ovisac convex, oval or circular, straight or curved, white. Old female short, oval or almost circular, dorsum

sclerotized. *Venter*: Antenna 8 (rarely 6-7 or 9) segmented; small in comparison to body size. Spiracular pore band usually wide, rarely narrow; spiracular spines normally present, usually similar in size, 2-3 rarely 1-4 each group; marginal setae in 1or 2 rows; interantennal setae and prevulvar setae on abdomen sternites less than 60 m long; small body setae scattered over entire body surface; multilocular pores on abdominal sternites; large tubular ducts numerous especially in a submarginal band. *Dorsum*: Small, elongate conical setae scattered on entire surface; disc pores usually of different diameters; small tubular ducts in moderate numbers on most of surface; anal ring with 6, rarely 8 setae with oval or circular pores; anal plates conical or triangular, normally with 4 apical setae (15).

The genus *Rhizopulvinaria* is especially common in xerophilous habitats of the Mediterranean area; generally on roots, roots crowns on stems of herbaceous and semiherbaceous plants; probably (?) has one generation per year (15).

Rhizopulvinaria pyrethri Borchsenius, 1952

Female short, oval or almost circular, almost 2.5 mm long. *Venter*: Antenna 8 segmented and segments wide; small in comparison to body size. Spiracular pore band with 2-3 pore rows each band contains 31-42 pores (Figure 1a); spiracular spines normally 2-3 setae and setae smaller then marginal setae (Figure 1b); marginal setae with small number in rows like chess board and distance between setae 2-3 times bigger than setae high; small body setae scattered over entire body surface; multilocular pores on 1st abdominal sternites and around the anal ring; large tubular ducts numerous especially in a submarginal band. *Dorsum*: Small, conical setae scattered on entire surface with small number; disc pores usually of different diameters; interantennal setae 3 pairs; small tubular ducts in moderate numbers on most of surface; anal ring with 6 setae with circular pores (16).

Hosts: *Pyrethrum* sp. (16), *Tanacetum* sp., *Alyssum* sp. (17).

Distribution: Armenia, Kazakhstan (17).

Material examined: Çatak (Van), 6 ♀, Tanacetum sp. 25.07.1997; Özalp (Van), Datura sp., 6 ♀, 03.07.1997; Özalp (Van), Tanacetum sp., 4 ♀, 03.07.1997; Hamur (Ağrı), Heliochrysum sp. 3 ♀, 02.07.1997.

Rhizopulvinaria turkestanica (Archangelskaya, 1931)

Female short, wide oval dark green, almost 3 mm long. *Venter*: Antenna 8 or 7 segmented, small in comparison to body size. Spiracular pore band with 2-5 pore rows each band contains 53-91 pores (Figure 2a); spiracular spines normally 2-3 conical setae and setae slightly smaller or as long as marginal setae (Figure 2b); marginal setae in 2 rows like chess board with high number of setae, distance between setae smaller than setae long; small body setae scattered over entire body surface; multilocular pores between posterior coxa, on 1st and 2nd abdominal sternites and around the vulva; large tubular ducts numerous especially in a submarginal band. *Dorsum*: Small, conical setae scattered on entire surface with high number; disc pores usually of different diameters; interantennal setae 5 pairs; small tubular ducts in moderate numbers on most of surface; anal ring with 8 setae with circular pores (16).

Hosts: *Acanthophyllum mucronatum* (18), *Acathophyllum spinosum, Teucrium polium, Artemisia* sp. (19), *Kochia* sp., *Marrubium* sp., *Salvia* sp., *Scutelleria* sp., *Teucrium* sp. (17), *Scrophularia* sp.(17,19).

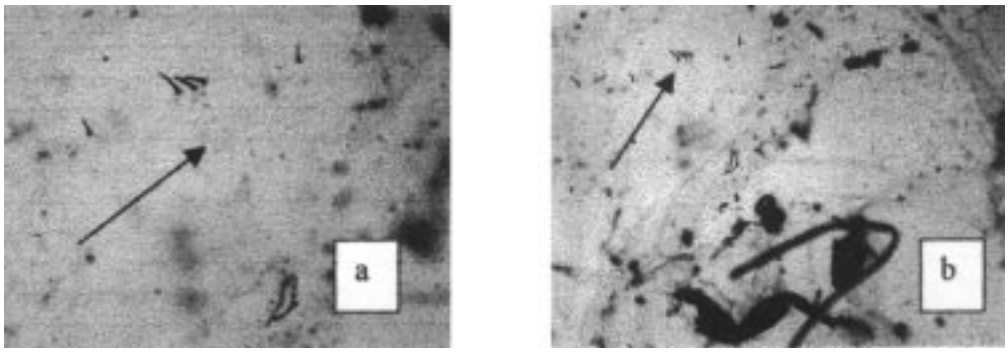

Figure 1. a. Spiracle setae, b. Small number of spiracle band pores *Rhizopulvinaria pyrethri*.

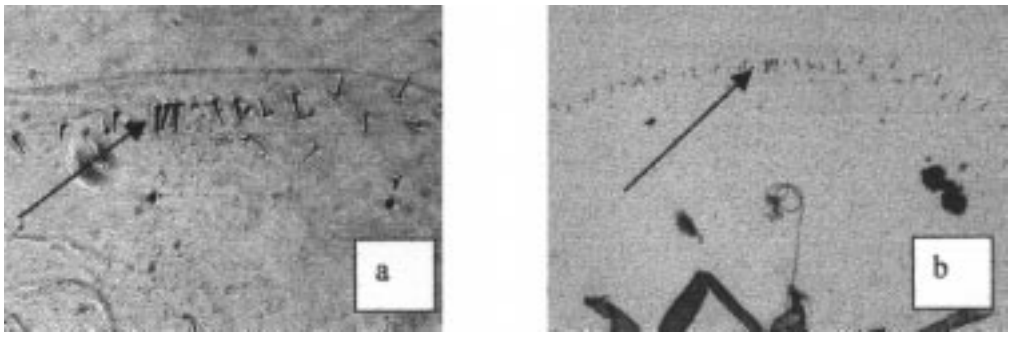

Figure 2. a-Spiracle setae, b-Large number of spiracle band pores of *Rhizopulvinaria turkestanica*.

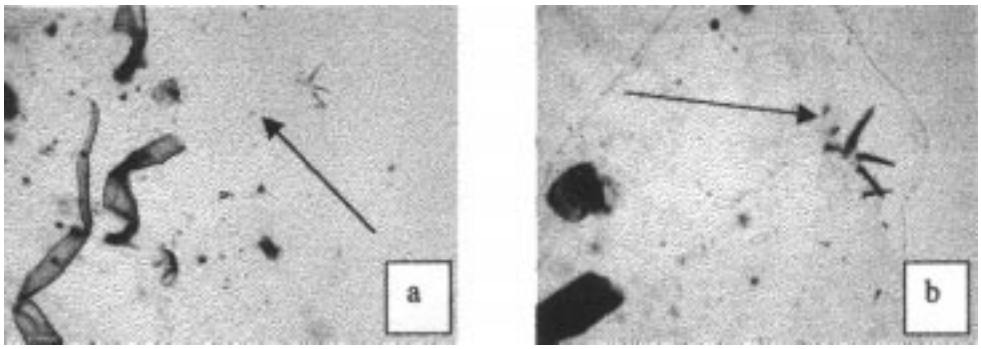

Figure 3. a-Spiracle setae, b-Large number of spiracle band pores of *Rhizopulvinaria viridis*.

Distribution: Armenia (17), Mongolia, Tajhikistan, Turkmenistan (18), Uzbekistan (19).

Material examined: Gürpınar (Van), Undetermined host, 4 ♀, 16.07.1997.

Rhizopulvinaria viridis Borchsenius, 1952

Young female green, 1.5 mm long, 1.1 mm wide. *Venter*. Antenna 8 or 7 segmented, small in comparison to body size. Spiracular pore band wide with 2-4 pore rows each band contains 51-66 pores (Figure 3a); spiracular spines normally 3 rarely 2 conical wide setae and setae a little longer or as long as marginal setae (Figure 3b); marginal setae conical in rows with small number, distance between setae equal or bigger than setae high; small body setae scattered over entire body surface; multilocular pores on abdominal sternites 2 to 4.5 and 6 and around the vulva; large tubular ducts numerous especially in a submarginal band. *Dorsum*: Small, conical setae scattered over entire surface with high number; disc pores usually of different diameters; interantennal setae 3 pairs; small tubular ducts in moderate numbers on most of surface; anal ring with 6 setae with circular pores (16).

Hosts: *Dianthus* sp., *Artemisia* sp. (16), *Minuartia setacea, Teucrium montanum* (20), *Teucrium polium* (17; 21), *Scutelleria* sp., *Thymus* sp., *Acantholimon karelinii, Galium* sp., *Veronica kurdica, Achillea tenuifolia* (17).

Distribution: Armenia (17), Moldova (20).

Material examined: Gürpınar, *Dianthus* sp., 6 ♀, 16.07.1997.

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