

**MORPHOLOGY OF NYMPHS AND BIOLOGY OF  
*RHODOCOCCUS PERORNATUS* (COCKERELL AND PARROTT)  
(HOMOPTERA: COCCIDAE) IN HUNGARY**

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**ABSTRACT**

*Rhodococcus perornatus* (Cockerell and Parrott) was formerly known as a rare, steppe-inhabiting, mesophilous species in the Palearctic region. However, in recent years it is becoming a pest of cultivated roses in Hungary, mainly in the Budapest region. It develops one annual generation. Because of the unusual dry and hot spring of 1993, all the eggs hatched in Buda by the middle of June. All nymphs settled on twigs by the end of June. The average number of eggs per female is 256. This soft scale overwinters as a second-instar nymph. The nymphs are described and illustrated.

KEYWORDS: Coccidae, *Rhodococcus perornatus*, nymphs, morphology, biology.

**INTRODUCTION**

*Rhodococcus perornatus* (Cockerell and Parrott) (Homoptera: Coccidae) is widely distributed in the Palearctic region only, including the countries of Austria, Bulgaria, Hungary, Italy, Moldavia and the Krasnoyarsk area of Russia, actually the south central part of Siberia (Ben-Dov, 1993). It is hard to detect the insects on the spiny stems of wild roses, and these are avoided by the general collector. Therefore, this species is probably more widely distributed also in Yugoslavia, Romania and eastern Russia, than the available records suggest. Tsalev (1966) considered the species a pest on commercial roses in Bulgaria. The present distribution in Hungary is shown in Fig. 1.

*Rhodococcus perornatus* was first collected in Hungary by Kozar (1970) in 1968 at Csopak, near the lake Balaton. Since then it was found at a number of other locations (Fig. 1). It was detected for the first time in Budapest in 1992 on the southern slopes of the Gellert Mountain on *Rosa "hybrida"* (polyantha group) and I have initiated my studies at this location in 1993.

**MATERIALS AND METHODS**

Weekly samples were taken from infested shrubs starting on May 12, 1993 until May 31, 1994. Specimens of all developmental stages were collected from the leaves, shoots and twigs. Live specimens were fixed in warm 75% ethyl alcohol and microscope slides were prepared by using

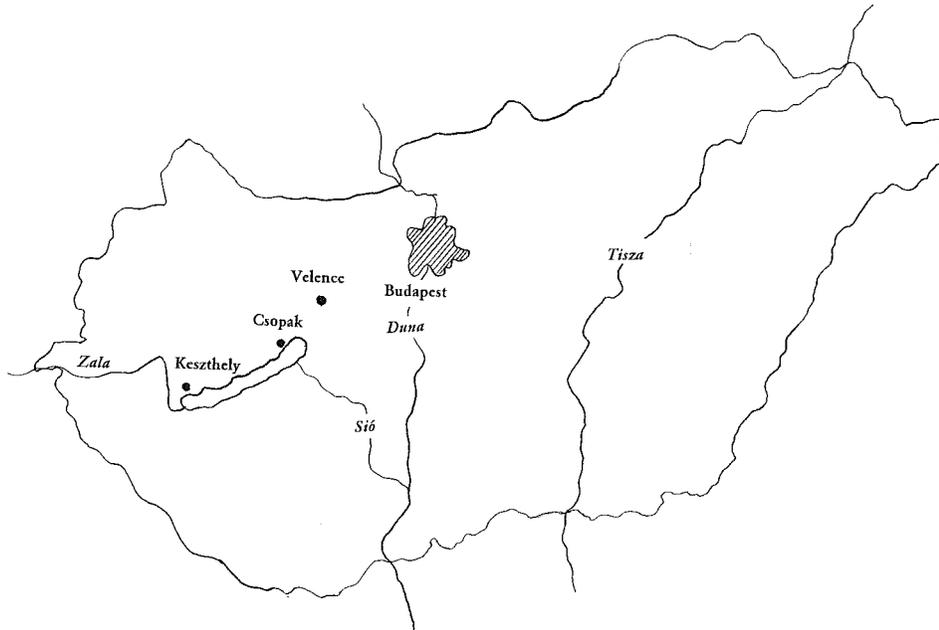


Fig. 1. Distribution of *Rhodococcus perornatus* in Hungary.

Wilkey's (1962) mounting method. From each sample 10 specimens were used for counting and measuring the needed morphological characters. Part of the weekly samples were preserved and stored in 75% ethyl alcohol.

## RESULTS

### *Rhodococcus perornatus* (Cockerell and Parrott)

*Lecanium (Eulecanium) perornatum* Cockerell and Parrott, 1899:236.

*Eulecanium perornatum* (Cockerell and Parrott); Fernald, 1903:191.

*Eulecanium bulgariense* Wünn, 1939:703. Described from Bulgaria, on rose. Synonymized by Kosztarab and Kozár, 1988:248.

*Rhodococcus rosophilus* Borchsenius, 1953:284. Described from Russia, at Krasnoyarsk, Minusinsk, on rose. Synonymized by Kosztarab and Kozár, 1988:248.

*Rhodococcus perornatus* (Cockerell and Parrott); Kosztarab and Kozár, 1988:248; Bendov, 1993:299.

### Morphology

**Egg-laying females** are almost hemispherical; anteriorly more convex, at posterior end flattened and protruding. Young specimens are yellowish brown, older ones are light brown in color, dorsum with a longitudinal brown band and with 3 transverse yellow and dark brown bands. On the dorsum there are also 2 longitudinal rows of indented spots that converge toward the posterior end and after death become large depressions. The adult female body

measurements vary considerably. It is (4.00–4.62) 4.20 mm long, (2.74–3.27) 3.02 mm wide and (4.15–5.86) 4.82 mm high. Antennae are 7-segmented.

**Eggs** are white and glassy at oviposition and after a few days become light yellow, orange, and later light brown in color; covered with fine white wax powder (Fig. 2).

**First-instar nymphs** are (524–779) 616  $\mu\text{m}$  long, and (143–350) 278  $\mu\text{m}$  wide (Fig. 3). The nymphs are first lemon yellow and soon become orange yellow in color, elliptical, but wider at anterior end and more pointed toward the posterior end. Antennae are 6-segmented, (127–175) 149  $\mu\text{m}$  long. Anal lobes protrude, each with a long anal lobe seta, about half as long as body.



Fig. 2. Rose twig infested with young adult females of *Rhodococcus perornatus* during egg laying.

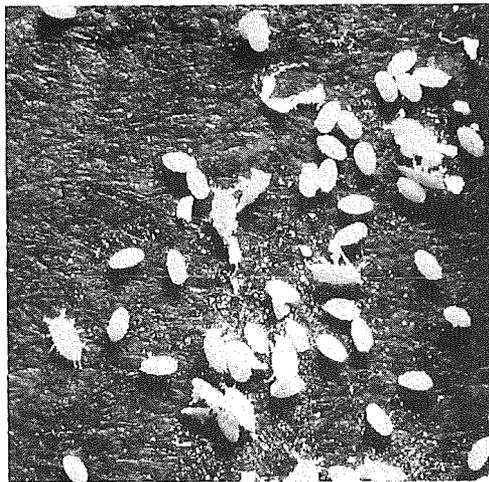


Fig. 3. Eggs with hatching first instars of *Rhodococcus perornatus*.

**Second-instar nymphs** are (588–1399) 995  $\mu\text{m}$  long, (286–843) 539  $\mu\text{m}$  wide, reddish brown in color, elliptical and rounded at both ends, spindle-shaped with lobe-like lateral extensions of wax at each spiracular area. Antennae 6-segmented, (127–191) 164  $\mu\text{m}$  long.

### Biology

This soft scale develops on all above ground parts of roses, often in large colonies (Fig. 3). Male puparia and adult females could form a coherent layer on the twigs. Females started egg-laying during first week of May and continued laying until mid June. The number of eggs per female was (212–645) 265 eggs.

The first-instar nymphs started hatching and appeared on the leaves and shoots first on May 12 in 1993 and continued hatching through June 22. The first moulting to the second instar started after June 15. Most of the crawlers settled on leaves, often at leaf base and on leaf petioles. By August 2 most of them moved to twigs, where they overwintered in the second-instar stage.

On the 20 rose bushes under investigation, I found only 8 male pupae and 6 empty scale puparia on May 12, therefore I assume that the species may also reproduce parthenogenetically. However, more investigations are required to satisfactorily clarify this question.

I suppose that this species was accidentally introduced to Hungary on imported roses for propagation.

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