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## **IS THE GENUS *LUSITANOCOCCUS* NEVES A JUNIOR SYNONYM OF *CUCULLOCOCCUS FERRIS* (HEMIPTERA: COCCOIDEA: PSEUDOCOCCIDAE)?**

### ABSTRACT

IS THE GENUS *LUSITANOCOCCUS* NEVES A JUNIOR SYNONYM OF *CUCULLOCOCCUS FERRIS* (HEMIPTERA: COCCOIDEA: PSEUDOCOCCIDAE)?

The genus *Lusitanococcus* was established by Neves in 1954 to include *arrabidensis*, a new species of mealybug collected in Portugal on *Erica arborea* and *E. lusitanica*. Later, on the basis of the original illustration and description, some workers considered that *Lusitanococcus* was a subjective synonym of *Cucullococcus* Ferris, 1941, while others considered it a valid genus.

Specimens were collected in the topotypic locality in Portugal off the same species of host plant and compared with the type specimens of *Lusitanococcus arrabidensis* Neves and with *C. vaccinii* Ferris, the type species of *Cucullococcus*. From this study, we have concluded that: (i) the genus *Lusitanococcus* is a junior subjective synonym of *Cucullococcus*, and that (ii) *arrabidensis* is a valid species. Some points with regard to generic characters of *Cucullococcus* are discussed.

Key words: Portugal, Spain, California, generic description, morphology, type, *Erica*, *Vaccinium*.

### INTRODUCTION

The family Pseudococcidae includes more than 260 valid genera, of which about 40% are monotypic (Ben-Dov, 1994). Only a few monotypic genera are present in Europe and, among them, *Lusitanococcus* Neves stands out because of its' peculiar morphology. The validity of *Lusitanococcus* has been doubtful since its original designation and currently its' status is controversial. In fact, on the basis of the original illustration and description, *Lusitanococcus* has been considered to be a subjective synonym of *Cucullococcus* Ferris (1941) by some workers while others have considered it a valid genus.

The purpose of this paper is to discuss the systematic status of the genus *Lusitanococcus* and its type species *arrabidensis*.

### A BRIEF HISTORY

Neves (1954) established the genus *Lusitanococcus* to include *arrabidensis*, a new species of mealybug collected in 1943 in Portugal (Serra da Arrábida)

on *Erica arborea* and *E. lusitanica*. In a footnote (p. 238) he wrote: “In 1943, when this paper was written, I was not aware of the publication of Prof. G.F. Ferris with the description of the genus *Cucullococcus*. The genus *Cucullococcus* is very similar to *Lusitanococcus* but it seems that there are some characteristics that are not shared by both genera. However, in 1946, Ferris told me that, according to him, it is the same genus” (translation from Portuguese). Neves (1954) also gave information regarding the first-instar nymph and the biology of *L. arrabidensis*. Subsequently, specimens have been collected in two other Portuguese localities: at Serra da Estrela, on *Erica* sp. in 1948 and at Mata de Leiria on *E. scoparia* in 1954.

The species was also recorded from Spain by Gomez-Menor Ortega (1957), who redescribed and illustrated the adult female and the 1<sup>st</sup>-, 2<sup>nd</sup>- and 3<sup>rd</sup>-instar female nymphs and the pupa, based on the Spanish specimens. He considered *Lusitanococcus* to be a valid genus. The views of other workers have been as follows: Morrison & Morrison (1966) regarded the genus as a subjective synonym of *Cucullococcus* Ferris without any comment or suggestions; McKenzie (1967), in his report of *Cucullococcus vaccinii* in California, did not mention *Lusitanococcus*; Kozár & Walter (1985) listed *Lusitanococcus* as a valid genus, but also quoted the Morrison & Morrison (1966) synonymy; Martin-Mateo (1985) included *arrabidensis* (sic!) in the genus *Cucullococcus* for the Spanish fauna; Tang (1992) redescribed the adult female of *arrabidensis* and, following Morrison & Morrison (1966), regarded *Lusitanococcus* as a subjective synonym of *Cucullococcus* but considered *arrabidensis* a valid species; Ben-Dov (1994) wrote, in the Remarks for *Cucullococcus*: “Tang’s (1992) interpretation that *Lusitanococcus* Gomez-Menor Ortega (sic!) is a subjective synonym of this genus is not accepted in this catalogue”; and for *Lusitanococcus*, he wrote: “Morrison & Morrison (1966) and Tang (1992) regarded this genus as a subjective synonym of *Cucullococcus* Ferris, but this interpretation is not accepted in this catalogue”.

As far as we know, none of the authors studied Neves syntype series or other Portuguese specimens and even Gomez-Menor Ortega (1957) based his observations on Spanish specimens of *arrabidensis*.

#### MATERIALS AND METHODS

Several fresh specimens of *arrabidensis* were collected on *Erica arborea* at the topotype site in February 1995 during a working visit to Portugal by the first author. These specimens have been studied and compared with both the syntype series of Neves and with specimens of *vaccinii*, the type species of *Cucullococcus* Ferris, including four paratype specimens.

The terminology for the adult female morphology follows McKenzie (1967). Abbreviations of depositories are as follows: Direcção Geral de Protecção da Produção das Culturas, Lisboa, Portugal (DPCL); Dipartimento di Biologia, Difesa e Biotecnologie Agro-forestali, University of Basilicata, Potenza, Italy (DBP); United States National Museum of Natural History, Beltsville, Maryland (USNM).

## RESULTS

From this study, we have concluded that: (i) the genus *Lusitanococcus* is a junior subjective synonym of *Cucullococcus*, and that (ii) *arrabidensis* is a valid species. The taxonomic redescription of *arrabidensis* will be presented in a future paper.

## TAXONOMY

*Cucullococcus* Ferris, 1941: 25; 1953: 312; McKenzie, 1967: 134; Tang, 1992: 588. Type species: *Cucullococcus vaccinii* Ferris, 1941, by original designation and monotypy.

*Lusitanococcus* Neves, 1954: 238; Gomez-Menor Ortega, 1957: 72. Type species: *Lusitanococcus arrabidensis* Neves, 1954, by original designation and monotypy. Synonymised by Morrison & Morrison, 1966: 112.

### *Derivatio nominis*

The name *Cucullococcus* is derived from the Latin '*cucullus*', meaning 'hood', and refers to the sclerotised and enlarged anterior extremity.

## DESCRIPTION OF GENUS

Body of adult females subcircular or very broadly oval, with distinct segmentation and anterior extremity extended forwards and sclerotised. Mounted specimens less than 2mm long and 1.5mm wide. Antennae 5- or 6-segmented. Legs short and stout; claw with or without a small denticle on plantar surface; translucent pores present or absent. Dorsal ostioles absent. Cerarii of usual type absent, represented only by a pair of small setae on each anal lobe area. Four to six dark-rimmed circuli present. Anal ring simple, entirely without pores, bearing six small setae along its extreme anterior border. Anal lobes absent or poorly developed. Trilocular pores of normal size and form on both sides, replaced on posterior region of abdominal venter by 5-10 locular pores. Quinquelocular pores on venter only. Tubular ducts on both sides, moderately large, more or less sclerotised, with slightly convex internal termination.

COMMENTS

The peculiar morphological characters of *Cucullococcus* are: (i) absence of dorsal ostioles and cerarii, (ii) presence of four to six dark-rimmed circuli, (iii) anal ring simple and without pores, (iv) the shape of the tubular ducts, (v) the extension and sclerotisation of the anterior extremity body, and (v) presence of quinquelocular pores ventrally.

The main differences in the adult females of *arrabidensis* and *vaccinii* are the structure of the legs and, in particular, the hind legs. In *vaccinii*, they are short and stout, normally developed, with distinct segments, without translucent pores and with a small denticle on the claw; in *arrabidensis*, the legs are short, stout and squat, sometimes distorted, with trochanter and femur fused and swollen (even globose in some specimens), with tibia and tarsus also fused or without free articulation, and with numerous, large and irregular translucent pores on all segments except the claw, which may or may not have a denticle.

However, these remarkable differences in the structure of the hind legs do not seem sufficient to justify the separation of these two genera, considering that they share many other morphological characters.

According to Ferris (1941) and McKenzie (1967), the “aberrant” genus *Cucullococcus* resembles certain species of *Ehrbornia* Ferris, *Discococcus* Ferris and *Rbodania* Goux, but the above combination of characters should preclude confusion.

Tang (1992) includes *Cucullococcus* in the sub-family Phenacoccinae, tribe Ritsemiini, together with *Ritsemia* Lichtenstein and *Polystomophora* Borchsenius. This interpretation requires further studies to evaluate the suprageneric group assignment.

MATERIAL EXAMINED

*Lusitanococcus arrabidensis* Neves.

**Syntype ♀♀.** Fifty-five adult females mounted on 12 slides, labelled as follows: *Lusitanococcus arrabidensis* n.sp., s/*Erica arborea*, Serra da Arrábida (right label); Leg. M. Neves, Id. e Prep.: M. Neves, 4/IX/943 (left label). Forty-three of the specimens are mounted on 9 slides in Canada Balsam; twelve are mounted on 3 slides in Hoyer fluid (DPCL).

**Non-type material.** Forty-four specimens on 29 slides, labelled: *Lusitanococcus arrabidensis* Neves, det. S. Marotta, Serra da Arrábida, Portugal, on *Erica arborea*, 4/II/1995, leg. S. Marotta & J.C. Franco (DBP).

*Cucullococcus vaccinii* Ferris.

**Paratype ♀♀.** Four adult females on one slide, labelled: *Cucullococcus vaccinii* n.sp., on *Vaccinium parvifolium* Sm, Castle Lake Rd., Siskiyou Co. California, 8H, Stanford University Natural History Museum (USNM), without date or collector.

**Non-type material.** Three adult females on one slide: *Cucullococcus vaccinii* Ferris, det. by D.F. Wilkey, 14/II/1962, 500 feet north Gasquet Dump, Del Norte Co., California, 10/II/1962, ex. *Vaccinium parvifolium*, L.J. Garret coll. (USNM). Three adult females on one slide, labelled: *Cucullococcus vaccinii* Ferris, on *Vaccinium* sp., Grants Pass, Oregon, 30/III/1970, J.B. Gianell colr. (USNM).

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