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Contribution to the orthopteroid (insecta: Blattoptera, orthoptera, dermaptera) fauna of Sal Island (cape verde)

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Contribution to the orthopteroid (Insecta: Blattoptera, Orthoptera, Dermaptera) fauna of Sal island (Cape Verde)

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ABSTRACT

Nineteen taxa of orthopteroid insects are reported from Sal Island in the Cabo Verde Archipelago. Two species of Blattoptera are new for Sal. The song oscillogram of a male of *Acheta domesticus* (Linnaeus, 1758) recorded in the island is shown.

KEY WORDS: Faunistic - Ecology - Bioacoustic.

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INTRODUCTION

The orthopteroid fauna of Cape Verde Archipelago is known just from a few papers, most of them (with the exception of Acrididae) based on collections of some travellers during a short stop in the archipelago. The first reference of orthopteroid insects of Cape Verde Archipelago is by de Saussure (1884) who describes *Sphingonotus canariensis canariensis* as a variety of *S. savignyi* (now *Pseudosphingonotus savignyi*). Bolivar (1889) reports some species from these islands in his catalogue of orthopteroids of the Lisbon Museum. More faunistical information is given by Burr (1927) after his short visit in 1913. Very important studies on the region are those of Chopard (1936, 1946, 1958). The latest of the series (1958) is the most comprehensive reference for the orthopteroid insects of Cape Verde Islands, treating not less than 53 species. It is also possible to find some information on orthopteroid fauna of the islands in Princis (1959), Saraiva (1961), Veiga (1967), Johnsen (1970), and Harz (1982). More recently new collections were made and studies were carried out on acridids by French entomologists (Duranton *et al.*, 1983, 1984, 1988; Launois *et al.*, 1988). Furthermore a survey for the inventory of the Hexapoda of Cabo Verde Islands was started during the 1980's by Van Harten (1990). We report here on some new data concerning the orthopteroid fauna of Sal.

MATERIALS AND METHODS

Sal Island is located in the northern part of the Cape Verde Archipelago (Fig. 1). It is, as are the other islands of this republic, of volcanic origin but it is one of the three mostly flat islands (the major elevation of Sal is Monte Grande, 406 m). The soil is stony and sandy, with very little vegetal covering. The climate is dry tropical with a rainy period approximately in May-June. During that short rainy season, the landscape of the island changes and the wide sandy plains become green with grass, with temporary ponds and streams. One of the main characteristics of Sal is the wind, which constantly blows through the island.

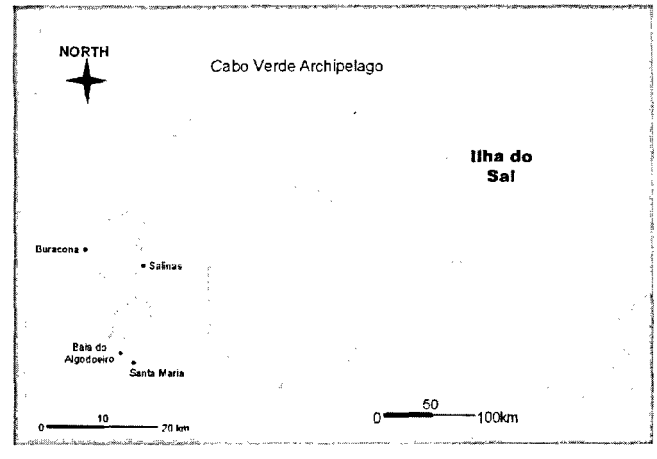

Fig. 1 - Cabo Verde Archipelago.

All the specimens have been collected by F. M. B., except for *Heteracris littoralis*, during a week in the middle of January 2003. Due to the flight ability of the Orthoptera and the hard wind blowing, it was very difficult to catch these insects, even with the butterfly net. Blattoptera and Dermaptera were found under stones slightly raised from the ground because the wind has dug under them. A fruitful searching method, also for other orders of insects and other invertebrates (Acari, Diptera, Coleoptera and Heteroptera), was the thorough examination of the scattered bushes and the cores of the dry grass tufts. The sound recording has been made using a digital audio recorder (Sony DAT TCD-D100) with a Sony microphone.

The specimens are in the personal collection of F. M. B. (Arzignano, Italy) and P. F. (Isola Vicentina, Italy).

TAXONOMIC ACCOUNTS

Below are listed the species collected by F. M. B. in the Ilha do Sal. The nomenclature for the Orthoptera is, in most of the cases, that adopted by Orthoptera Species File On Line (online version at January 2003: *http://140.247.119.145/Orthoptera/*). In the list is given the name of the species, the examined material and notes regarding the biology and the collecting circumstances.

BLATTOPTERA

BLATTIDAE

Periplaneta americana (Linnaeus, 1758)

Examined material: Salinas, 1♂, 14.I.03; Santa Maria, Hotel Belorizonte, 16°35.814' N 022°54.787' W, 1♀, 11/18.I.03; Santa Maria, 1♂, 18.I.03.

This is a common cosmopolitan species, living and collected in anthropic sites of Ilha do Sal. *P. americana* is known from most islands except Maio and Santiago.

BLABERIDAE

Rhyparobia maderae (Fabricius, 1781)

Examined material: Santa Maria, 1♀, 18.I.03.

This is a species of African origin, with a wide range of distribution, almost cosmopolitan. This species is gregarious, living outdoors only in the tropics, anthropophilous in the rest of the world. This cockroach is ovoviviparous and females take more time than males to become adults because of an additional moult (Cornwell, 1968).

Rhyparobia maderae has been collected dead in a street of the village Santa Maria. It was not known for Sal before.

Pycnoscelus surinamensis (Linnaeus, 1758)

Examined material: Santa Maria, Hotel Belorizonte, 16°35.814' N 022°54.787' W, 2♀, 11/18.I.03.

The species shows obligatory parthenogenesis; its next relative is the bisexual species, *P. indicus* (Fabricius, 1775) (Roth, 1967). The two species are very similar and only distinguished by their different mode of reproduction. *Pycnoscelus surinamensis* can be considered as the parthenogenetic strain of *P. indicus*. The geographic origin of both is the Malay Archipelago. *Pycnoscelus surinamensis* now shows a cosmopolitan distribution. In the tropics it occurs outdoors, in more temperate zones it can be found in greenhouses, where it can cause damages to the plants, or in other anthropic sites.

The females here reported have been caught in the flower-beds of a hotel. The species is known from all Cape Verdian Islands.

BLATTELLIDAE

Symploce pallens (Stephens, 1835)

Examined material: Santa Maria, Hotel Belorizonte, 16°35.814' N 022°54.787' W, 1♂, 5 nymphs, 11/18.I.03.

The species is presumably of African origin, but now has a worldwide distribution. So far, it was known from Sto. Antão, S. Vicente, S. Nicolau and Maio, but not from Sal. The species was earlier (Chopard, 1958; Princis, 1959) reported from the islands under the names *S. benzoni* Princis, 1951 and *S. vicentina* Princis, 1959, which, however, have turned out to be synonyms of *S. pallens* (Roth, 1984).

In Figure 2 the glandular pit and the stylus are shown with other body structures. Found under a stone on the beach.

ORTHOPTERA

GRYLLIDAE

Acheta domesticus (Linnaeus, 1758)

Examined material: (recorded song only, Figure 3) Santa Maria, Hotel Belorizonte, 16°35.814' N 022°54.787' W, 1♂, 16.I.03.

This antropophilous species is distributed worldwide. It is saprophagous. In Figure 3 is shown the oscillogram of the song recorded. Because of the strong wind noise, the track was very disturbed and filtering has been necessary to obtain the oscillogram. The song is that typical for the species, with many polysyllabic verses.

PYRGOMORPHIDAE

Pyrgomorpha cognata Krauss, 1877

Examined material: Santa Maria, Hotel Belorizonte, 16°35.814' N 022°54.787' W, 1♂, 11/18.I.03.

Under the taxon *P. cognata* are grouped the following species: *P. conica fusca* (Palisot de Beauvois, 1807), *P. conica tereticornis* (Brullé, 1840), *P. bispinosa incognita* Hsiung & Kevan, 1975, *P. cognata maculifemur* Kevan,

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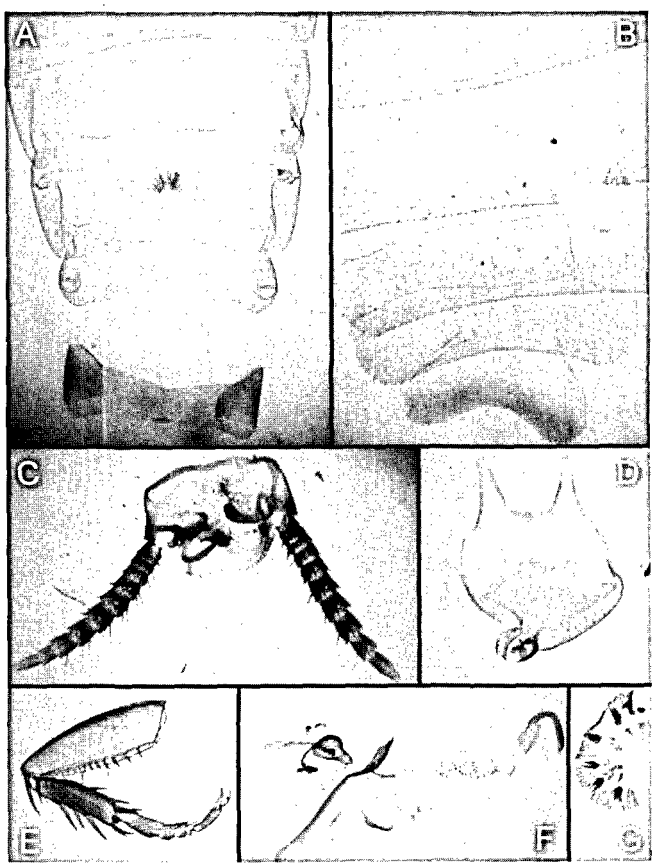

Fig. 2 - *Symploce pallens* (Stephens, 1835). **A**, male dorsal abdominal surface with glandular pit; **B**, male ventral abdominal surface; **C**, male last abdominal segment with cerci; **D**, male subgenital plate; **E**, male leg; **F**, male phallus; **G**, male ventriculus. (Photo P. Fontana)

1968. The morphology of all these species is very similar and their distribution is partially overlapping, therefore their identification is difficult (Mestre, 1988; Launois-Luong & Lecoq, 1989).

Pyrgomorpha cognata (Fig. 4) moves in the different regions of its distribution area in function of the evolution of the ecological conditions and is an Orthoptera of average economical importance (Launois-Luong & Lecoq, 1989).

This species (or group of species), which ranges from Africa north of the Equator to the Middle East, is very variable and common in West Africa.

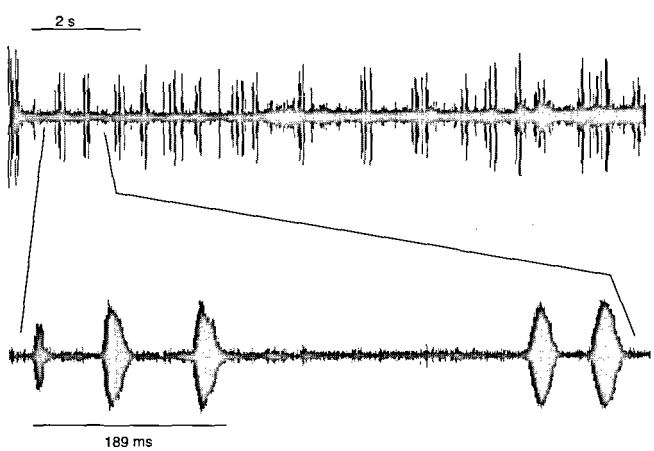

Fig. 3 - Oscillogram of male *Acheta domesticus* (Linnaeus, 1758) recorded in Sal, loc. Santa Maria, 16.I.03, h. 20:40. (Rec. by F. M. Buzzetti)

ACRIDIDAE

Sphingonotus rubescens burri Chopard, 1936

Examined material: Buracona, 1♂ and 4♀, 14.I.03.

This subspecies has been described by Chopard (1936) for the locality S. Filipe in the Fogo Island and until now is known only for the Cabo Verde Archipelago. It can be differentiated from the nominal form especially by the smaller size, further by the sculpture of the pronotum being more marked and the hind margin of the pronotum being more angulated. This subspecies is considered an insular form of the nominal species but its status is not yet clear (Duranton *et al.*, 1983). It is possible that it is also a distinct species or a simple rare size variation of *S. rubescens*.

Sphingonotus rubescens is given by Duranton *et al.* (1988) as xero-thermophilous but with great ecological range.

The specimens here reported were collected in the stony plain between Buracona and Monte Leste (M. Pagliona; Fig. 5); they had either sandy-grey or pink coloration patterns. Here the species was more abundant than in other southern localities of the island.

Acrotylus patruelis (Herrich-Schaeffer, 1838)

Examined material: Santa Maria, Hotel Belorizonte, 16°35.814' N 022°54.787' W, 3♂ and 2♀, 11/18.I.03.

Acrotylus patruelis is widely distributed in southern Europe, South-West Asia, Africa, and is very common in West Africa. The specimens from Sal have the characteristics of *patruelis* but their arolia are a little bit shorter. In Sal this species is one of the most common, being observed in several exemplars in many localities of the entire island.

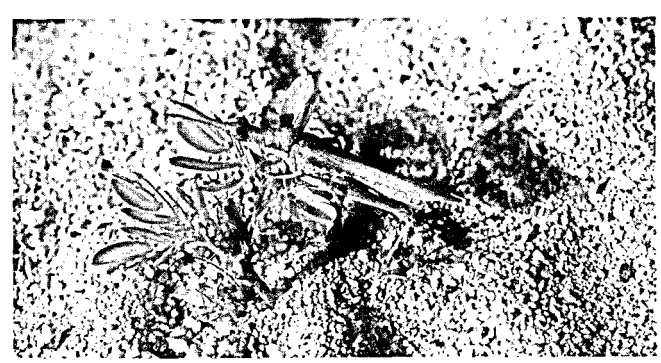

Fig. 4 - Male of *Pyrgomorpha cognata* Krauss, 1877 from Santa Maria. (Photo F. M. Buzzetti)

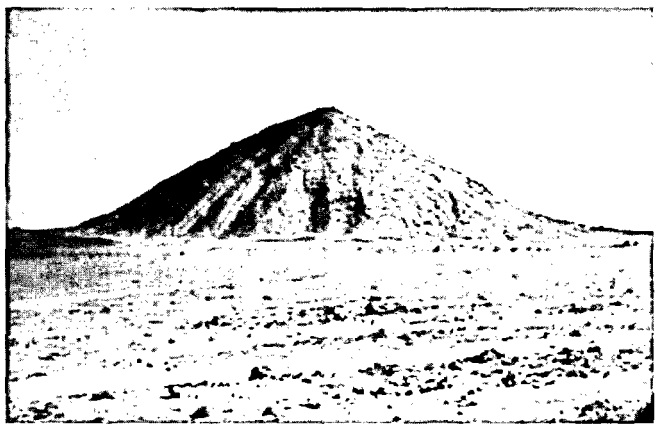

Fig. 5 - Monte Pagliona near Buracona, habitat of *Sphingonotus rubescens burri* Chopard, 1936 and *Acrotylus longipes* (Charpentier, 1845). (Photo F. M. Buzzetti)

Economically, it is an Orthoptera of average importance; it especially damages the irrigated gardens (Launois-Luong & Lecoq, 1989).

Acrotylus longipes (Charpentier, 1845)

Examined material: Buracona, 1♀, 14.I.03.

This species is distributed in southern Europe, western Asia and most of Africa; in the Cabo Verde Archipelago it is very common, sometimes pullulating in some island (Duranton *et al.*, 1983).

Heteracris littoralis (Rambur, 1938)

Examined material: Santa Maria, 1♀, 24.I.01, legit Patrizia Dall'Ara.

Heteracris littoralis is a Mediterranean Orthoptera that ranges to the southern Sahara.

It is present in the whole archipelago except on Fogo and Brava islands (Duranton *et al.* 1983, 1984).

DERMAPTERA

LABIDURIDAE

Labidura riparia (Pallas, 1773)

Examined material: Surfing bay W of Santa Maria, Baia do Algodoeiro, 1♀, 14.I.03.

This cosmopolitan earwig is very common on the islands of the Atlantic Ocean (Chopard 1946). The specimen was found under a stone.

CONCLUSIVE REMARKS

Of the nineteen orthopteroid insects listed in Table I for Sal island, two Blattopetra were not known before from Sal though they were known from other islands of the Archipelago: *Rhyparobia maderae* and *Symploce pallens*.

There are few references of Orthoptera Caelifera for Cabo Verde, but the citations on other orthopteroid insects

TABLE I - *List of the orthopteroid insects actually known from Sal island (Cabo Verde).*

	Species	Occurrence	Reference
	Blattoptera		
1	*Periplaneta americana* (Linnaeus, 1758)	Confirmed	Chopard, 1958
2	*Rhyparobia maderae* (Fabricius, 1781)	New for Sal	
3	*Pycnoscelus surinamensis* (Linnaeus, 1758)	Confirmed	Chopard, 1958
4	*Symploce pallens* (Stephens, 1835)	New for Sal	
	Orthoptera Ensifera		
5	*Acheta domesticus* (Linnaeus, 1758)	Confirmed	Chopard, 1936
6	*Phaneroptera nana nana* Fieber, 1854		Chopard, 1958
7	*Oecanthus similis* Chopard, 1932		Chopard, 1958
	Orthoptera Caelifera		
8	*Pyrgomorpha cognata* Krauss, 1877	Confirmed	Chopard, 1958; Duranton *et al.*, 1983
9	*Diabolocatantops axillaris axillaris* (Thunberg, 1815)		Chopard, 1958; Duranton *et al.*, 1983
10	*Schistocerca gregaria* (Forskål, 1775)		Chopard, 1958; Duranton *et al.*, 1983
11	*Acorypha clara* (Walker, 1870)	Doubtful for Sal?	Duranton *et al.*, 1983
12	*Sphingonotus c. canariensis* (Saussure, 1884)		Duranton *et al.*, 1983
13	*Sphingonotus r. rubescens (Walker, 1870)*		Chopard, 1958; Duranton *et al.*, 1984
14	*Sphingonotus rubescens burri* Chopard, 1936	Confirmed	Chopard, 1958; Duranton *et al.*, 1983
15	*Acrotylus patruelis* (Herrich-Schaeffer, 1838)	Confirmed	Duranton *et al.*, 1984
16	*Acrotylus longipes* (Charpentier, 1845)	Confirmed	Duranton *et al.*, 1983
17	*Oedaleus s. senegalensis* (Krauss, 1877)		Chopard, 1958; Duranton *et al.*, 1983
18	*Heteracris littoralis* (Rambur, 1938)	Confirmed	Chopard, 1958; Duranton *et al.*, 1983
	Dermaptera		
19	*Labidura riparia* (Pallas, 1773)	Confirmed	Chopard, 1936, 1958

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such as Blattoptera, Mantodea, Orthoptera Ensifera and Dermaptera are even less. Furthermore, there were no references on Orthoptera Caelifera and other orthopteroid insects after 1988 and 1958 respectively. Therefore, it is not surprising that even on such small islands new faunistical data can be provided from short excursions.

The reason can be twofold. The Cabo Verde Archipelago has become a tourist area and there is much travel between the islands and Africa: this could explain why in Sal two Blattoptera new for the island have been found. It must also be mentioned that in the last studies on the archipelago only the Orthoptera Caelifera were treated so the other groups of orthopteroid insects could easily keep some new records.

The abundance of the species depends on the seasons, which greatly influence the landscape and the habitats. Only a visit in each season of the year can give a complete overview of the whole orthopterological fauna. In fact no specimen of *Diabolocatantops axillaris axillaris* (Thunberg, 1815), a very common Caelifera that overwinters during the dry season, was found during January 2003.

A notable characteristic of the island is that in such an arid place, which seems to be such a poor habitat for orthopteroid insects, all vegetal matter, alive or dry, attracts many kinds of insects and most of the specimens. For example, all the exemplars of *Acrotylus patruelis* were collected in a flower-bed not bigger than one square meter.

Assuming that the Blattoptera and Dermaptera can move with human activities, a different approach has to be used for Orthoptera. Among the Orthoptera the only flightless species known for Cabo Verde Archipelago is *Eyprepocprifas insularis* Donskoff, 1982, not recorded from Sal and just known from a single specimen collected in San Nicolau Island (Duranton *et al.*, 1983). All the remaining species are good fliers. Therefore, it is possible to assume that the Orthoptera fauna of Sal, lacking flightless elements of endemic origin, is of very recent and foreign origin.

The orthopteroid insect fauna of Sal has increased and there are no doubts that the fauna of the island, as the fauna of the whole Cabo Verde Archipelago, is influenced by the climatic character of this country and also by the human activities. So a stabile overlook in such a small and sensitive environment is advisable to preserve and estimate its fauna.

Duranton *et al.* (1983) stress that the local ecological conditions can undoubtedly cause the quick disappearance of certain species. But, on the other hand, the winds should cause a regular recolonisation coming from the continent, particularly for the good flying species like many of the Caelifera. The most spectacular case is that of the Desert Locust, *Schistocerca gregaria*: the swarms coming from the African continent are regularly reported colonizing or flying over the archipelago.

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REFERENCES

Bolivar I., 1889 - Ortópteros de Africa del Museo de Lisboa. J. Sci. Acad. Lisboa, 1: 73-112.

Burr M., 1927 - Notes from the Cape Verde Islands. Entomol. Rec. J. Var., 39: 91-95.

Chopard L., 1936 - Mission de M. A. Chevalier aux Iles du Cap Vert (1934). Rev. Fr. Entomol., 3: 88-96.

Chopard L., 1946 - Les orthopteroides de îles atlantides. Mém. Soc. Biogéogr., 8: 199-208.

Chopard L., 1958 - Orthopteroidea. Résultats de l'expédition zoologique du Professeur Dr. Hakan Lindberg aux Iles du Cap Vert durant l'hiver 1953-1954. N°16. Commentat. Biol. Helsingfors, 17: 1-17.

Cornwell P. B., 1968 - The cockroach, vl. 1. Hutchinson & CO., London.

Duranton J. F., Launois M., Launois-Luong M. H., Lecoq M., 1983 - Contribution à l'inventaire faunistique des Acridiens de l'Archipel du Cap-Vert (ORTHOPTERA). Bull. Soc. Entomol. Fr., 88: 197-224.

Duranton J. F., Launois M., Launois-Luong M. H., Lecoq M., 1988 - Première contribution à l'étude écologique des Acridiens (Orthoptères) de l'Archipel du Cap Vert. Cour. Forschungstinst. Senckenb., 105: 179-188.

Duranton J. F., Launois M., Launois-Luong M. H., Lecoq M., Popov G., 1984 - Nouvelle contribution à l'inventaire faunistique des Acridiens de l'Archipel du Cap Vert. Signalisation du genre *Wernerella* KARNY 1907 et description de *Wernerella atlantica* POPOV n. sp. (Orth. Acrididae). Cour. Forschungstinst. Senckenb., 68: 39-47.

Harz K., 1982 - Zur Orthopterenfauna (s. lat.) der Kapverdischen Inseln. Cour. Forschungstinst. Senckenb. 52: 153-154.

Johnsen P., 1970 - Notes on African Acridoidea in Danish Museums. Part I. Nat. Jutl., 15: 121-162.

Launois M., Launois-Luong M. H., Lecoq M., 1988 - Fauna Cabo-Verdiana: Catalogue des Acridiens de l'Archipel du Cap-Vert (Insectes – Orthopteres – Caeliferes). Cour. Forschungstinst. Senckenb., 105: 155-163.

Launois-Luong M. H., Lecoq M., 1989 - Vade-mecum des criquets du Sahel. Collection Acridologie Opérationelle no. 5. Cirad-Prifas, Montpellier.

Mestre J., 1988 - Les acridiens des formations herbeuses d'Afrique l'Ouest. CIRAD-PRIFAS, Montpellier.

Princis K., 1959 - Zwei neue Blattarien von den Kapverdischen Inseln. Eos - Rev. Esp. Entomol., 35: 279-282.

Roth L. M., 1967 - Sexual isolation in parthenogenetic *Pycnoscelus surinamensis* and application of the name *Pycnoscelus indicus* to its bisexual relative (Dictyoptera: Blattaria: Blaberidae: Pycnoscelinae). Ann. Entomol. Soc. Am., 60: 774-779.

Roth L. M., 1984 - The genus Symploce Hebard. I. Species from the West Indies. (Dictyoptera: Blattaria: Blattellidae). Ent. Scand., 15: 25-63.

Saraiva A. C., 1961 - Conspectus da entomofauna cabo-verdiana. Estudos, Ensaios e Documentos, 83. Junta de Investigações do Ultramar, Lisboa.

Saussure H. de, 1884 - Prodromus Oedipodiorum insectorum ex ordine Orthopterorum. Mém. Soc. Phys. Hist. Nat. Genève, 28: 1-256.

Van Harten A., 1990 - The Inventory of the Insect Fauna of the Cape Verde Islands. Cour. Forschungstinst. Senckenb., 129: 103-108.

Veiga L., 1967 - Contribuição para um catálogo comentado dos ortópteros do archipelago de Cabo Verde. Garcia de Orta (Lisb.), 15: 487-494.