ON THE BLATTARIAE OF THE AZORES AND MADEIRA [1]

By K. PRINCIS [2]

The material collected by the expedition is rather meagre and consists almost completely of immature individuals. This is obviously due to the season because the collecting was done in March and April when cockroaches generally have not yet passed through their larval stages. The entire collection includes only three species; nevertheless, it provides some new distributional data on two of the three represented species.

Blatta orientalis Linné, 1758

Azores, São Miguel: larva, Ponta Delgada, Loc. 9, 13.III.1957, Brinck & Dahl leg.

This synanthropous species has already been recorded from the Azores, Canaries and Madeira.

Loboptera fortunata Krauss, 1892

Azores, São Miguel: larva, São Pópulo, 7.5 km E of Ponta Delgada (Loc. 3, sandy grassy ground), 1.III.1957, Brinck & Dahl leg.

Madeira: 4 larvae, Porto Novo, Ribeira do Porto Novo (Loc. 119, ravine, under stone), 22.IV.1957, Brinck & Dahl leg.

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1) Report No. 29 from the Lund University Expedition in 1957 to the Azores and Madeira

2) Zoological Institute of the University of Lund, Sweden.

Madeira: larva, Serra d'Água, Power-station (Loc. 120, 600 m, grassy ground, under stone), 23.IV.1927, Brinck & Dahl leg.

Madeira: 13 larvae, Boca do Serrado, at Grande Curral (Loc. 131, 1000 m), 27.IV.1957, Brinck & Dahl leg.

Madeira: 2 larvae, 1 km E of Encumeada (Loc. 135, ca. 800 m), 25.IV.1957, Brinck & Dahl leg.

This species has hitherto only been recorded from the Canaries and is new to the Azores and Madeira.

Arbiblatta chavesi (Bolívar, 1898)

Azores, São Miguel: larva, at Lagoa das Furnas (Loc. 22, at stream), 10.III.1957, Brinck & Dahl leg.

Azores, São Miguel: 6 larvae, Caldeiras, 5 km SE of Ribeira Grande (Loc. 28, swept in vegetation), 14.III,1957, Brinck & Dahl leg.

Azores, Faial: larva, 0.5 km WNW of Ribeirinha (Loc. 73, under stone), 1.IV.1957, Brinck & Dahl leg.

Azores, Faial: ♀, Costa da Nau, 3 km NW of Capelo (Loc. 88, *Erica* bush), 4.IV.1957, Brinck & Dahl leg.

Azores, Faial: larva, Nasce Água, 3 km S of Cedros (Loc. 93, ravine, under stone), 5.IV.1957, Brinck & Dahl leg.

Madeira: larva, Ribeiro Frio, 7 km SW of Faial (Loc. 115, ravine, 800 m), 21.IV. 1957, Brinck & Dahl leg.

Madeira: larva, Porto Novo, Ribeira do Porto Novo (Loc. 119, under stone), 22.IV.1957, Brinck & Dahl leg.

Madeira: larva, Casa das Queimadas (Loc. 122, 880 m), 24.IV.1957, Brinck & Dahl leg.

This species has hitherto only been known from the Azores. New to Madeira.

ON THE ORIGIN OF MACARONESIAN BLATTARIAE

The distribution pattern of the currently known Macaronesian cockroaches is as follows:

	Madeira	Azores	Canaries	Cape Verde Islands
* 1a. *Zetha vestita* (Brullé)			+	
* 1b. *Zetha simonyi* (Krauss) = *vestita*			+	
* 1c. *Zetha chavesi* (Bolívar) = *vestita*	+	+		
* 1d. *Zetha freyi* Chopard = *vestita*		+		
* 1e. *Tivia bispinosa* Chopard = *vestita*				+
* 2. *Euthyrrhapha pacifica* (Coq.)				+
* 3. *Pycnoscelis surinamensis* (L.)	+	+	+	+
* 4. *Leucophaea maderae* (Fabr.)	+	+	+	+
* 5. *Periplaneta americana* (L.)	+	+	+	+
* 6. *Periplaneta brunnea* Burm.	+		+	+
* 7. *Blatta orientalis* L.	+	+	+	
* 8. *Leurolestes pallidus* (Br. W.)			+	
* 9. *Leurolestes circumvagans* (Burm.)			+	
* 10. *Blattella germanica* (L.)		+	+	+
* 11. *Loboptera decipiens* (Germ.)	+			
◕ 12. *Loboptera fortunata* Krauss	+	+	+	
● 13. *Loboptera canariensis* Chopard			+	
O 14. *Caboverdea cincta* Princis				+
O 15. «*Temnopteryx*» *chevalieri* Chopard				+
O 16. *Symploce lindbergi* Chopard				+
O 17. *Symploce vicentina* Princis				+
* 18. *Supella longipalpa* (Fabr.)			+	
* 19. «*Ectobius panzeri* Steph.»	+			
● 20. *Arbiblatta brullei* nom. nov. [3]			+	
● 21. *Arbiblatta pallida* Chopard			+	
◕ 22. *Arbiblatta infumata* (Br. W.)	+			
◕ 23. *Arbiblatta chavesi* (Bol.)	+	+		
● 24. *Lobolampra lindbergi* Chopard			+	

3) Brullé's *Blatta bivittata* (in Webb & Berthelot, Hist. nat. Canar., 11:2, Paris 1844, p. 75, pl. V, fig. 1) is invalidated by Serville's *Blatta bivittata* (Hist. nat. Ins., Orth., Paris 1839, p. 108). I propose herewith a new name ***Arbiblatta brullei*** for Brullé's species.

An examination of the above list shows that three different groups of species are concerned. The first group (●) includes the following species: *Loboptera fortunata* Krauss, *L. canariensis* Chop., *Arbiblatta brullei* nom. nov., *A. pallida* Chop., *A. infumata* (Br. W.), *A. chavesi* (Bol.) and *Lobolampra lindbergi* Chop. The affinities of these species point to North Africa, where *Loboptera* as well as *Arbiblatta* and *Lobolampra* have reached their highest development. Thus, there is no doubt that the ancestors of the first group species came from this source and successively developed endemic species of palaearctic origin in Macaronesia.

The second group (o) is limited to the Cape Verde Islands and includes four species: *Caboverdea cincta* Princis, «*Temnopteryx*» *chevalieri* Chopard, *Symploce lindbergi* Chopard and *Symploce vicentina* Princis. These endemic species are clearly of ethiopian origin, because their nearest relatives, as far as we know them, occur in Western Africa. As regards «*Temnopteryx*» *chevalieri* its original generic assignment is uncertain; it may possibly be instead a member of the genus *Caboverdea*. I showed recently (Princis 1963) that *Temnopteryx* is an endemic South African genus and therefore it seems improbable that a member of this genus should occur in Macaronesia. The two above groups obviously represent the indigenous cockroach fauna of the Macaronesian Islands.

The third group (*) includes recent immigrants introduced by man. Among them we note above all the wide-spread synanthropous species, such as: *Euthyrrhapha pacifica* (Coq.), *Pycnoscelis surinamensis* (L.), *Leucophaea maderae* (Fabr.), *Periplaneta americana* (L.), *Periplaneta brunnea* Burm., *Blatta orientalis* L., *Blattella germanica* (L.) and *Supella longipalpa* (Fabr.). We do not know when and from where they have been introduced and probably we shall never know it exactly. *Leurolestes pallidus* (Br. W.) and *Leurolestes circumvagans* (Burm.) are obviously of neotropical origin and very probably have been introduced from the West Indies. I refer without hesitation also *Loboptera decipiens* and «*Ectobius panzeri*» to this group; however, I am very much in doubt as to correct identification of the second species. I suppose it to be *Ectobius servillei* Fernandes (= *E. concolor* Serville, nec Hagenbach) and the specialized area of the 7th tergite as figured by Chopard (1938, fig. 1) seems to prove this assumption. *E. panzeri* occurs in Northwestern Germany, Northern France, Belgium, England and the Netherlands, while *E. servillei* is known from Southern

France and the Iberian Peninsula. *Loboptera decipiens* and *Ectobius servillei* have obviously been introduced to Madeira as fellow immigrants by colonists.

Four species of *Zetha (vestita, simonyi, chavesi* and *freyi)* have been described from the Macaronesian Islands, one *(rufescens)* is known from Peru and Ecuador, and finally Hawaii and Guatemala have one species each. The species in Hawaii has been recorded as *Holocompsa fulva* (Burmeister) (Zimmerman 1948, p. 98), a generically distinct insect, and Guatemalan records are previously unpublished. My friend Dr. Ashley B. Gurney of Washington has studied *Zetha* material from the Canaries, Azores, Central America and Hawaii and found that it apparently belongs to the same species (unpublished data). Moreover, some years ago I borrowed two specimens (allotype ♀ and additional male) of *Zetha freyi* from the Helsingfors Museum and compared them with specimens of *Z. rufescens* Shelford taken in Peru. However, I did not find any noteworthy differences which could justify distinctness of these two species. Consequently, there is every reason to believe that but one species is present and in this case the valid name of it should be *Zetha vestita* (Brullé). Chopard supposes that *Zetha* is of American origin which seems to be correct. As far as we know the general part of the distribution area of *Zetha* is in America, but we do not know whether the Peru-Ecuador area is connected with that of Guatemala or not; however, it is clear that the Hawaiian and Macaronesian populations of *Zetha* must be of secondary origin, i. e. introduced by man. As Dr. Gurney informs me, the genus lends itself to transportation by man, and the quarantine inspectors for plant protection purposes of the U. S. Department of Agriculture have taken it repeatedly in both sexes, at various ports, chiefly from the Azores and Guatemala. It is possible that *Zetha* was first introduced to the Canaries by the Spaniards. The Spanish commercial route from Peru went via Panama to the Canaries and Spain and this way there was a possibility for *Zetha* to establish a colony in the Canaries inasmuch as the climate was quite tolerable.

As to the immature specimen recorded as *Tivia bispinosa* by Chopard from the Cape Verde Islands, it may also belong to *Zetha*. I showed recently (Princis 1963) that *Tivia bispinosa* is merely a synonym of *Tivia fratercula*, which species occurs in the Transvaal, Natal, Swaziland, Mozambique, Southern Rhodesia, Nyasaland and Betchuanaland. It is highly improbable that this species will appear in Macaronesia.

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