

ON SOME THYSANURA AND MACHILIDA FROM THE AZORES (INSECTA)¹

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With 4 figures in text.

Material of Thysanura and Machilida kindly submitted for examination by Dr. Per Brinck, collected by Dr. Dahl and himself in the Azores in 1957, confirms previous ideas on the small degree of endemism which characterizes these islands. The remaining components of Macaronesia (Madeira, Canary Is. and Cape Verde Is.) all possess endemic species of Machilida and in the case of the Cape Verde Is., also Thysanura; no endemic species can be reported from the Azores.

A list of the species collected will be followed by a short discussion of their probable origin.

Thysanura

Only the family Lepismatidae is known from the Azores.

Lepisma saccharina L.

Material examined: SÃO MIGUEL: Relva, nascente dos Lagos, at spring under stone, 15.III.1957, loc. 32 (1 female); 1 km N of Povoação, Ribeira dos Lagos, under stones, 24.III.1957, loc. 60 (numerous males and females); Ribeirão dos Lagos, under stone, 24.III.1957 (1 male).—PICO: São João, rocky shore, volcanic sand, 9.IV.1957, loc. 103 (several males and females).

1) Report No. 25 from the Lund University Expedition in 1957 to the Azores and Madeira.

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Lepisma sp.

Material examined: SÃO MIGUEL: Ribeira das três Voltas, near Ribeira Chã, 23.III.1957 (1 immature specimen).

Machilida

Only the family Machilidae is represented on the Azores.

Lepismachilis sp.

Material examined: SÃO MIGUEL: 1 km W of Ribeira Seca, W of Ribeira Grande, sandy, grassy ground under stone, 22.III.1957, loc. 53 (3 females).—TERCEIRA: 0.5 km S of Praia da Victória, under stones on a sandy shore, 27.III.1957, loc. 69 (1 female).—FAIAL: Costa da Náu, 3 km NW of Capêlo, under stones on a semi desert-like field of ashes, 4.IV.1957, loc. 88 (9 females).

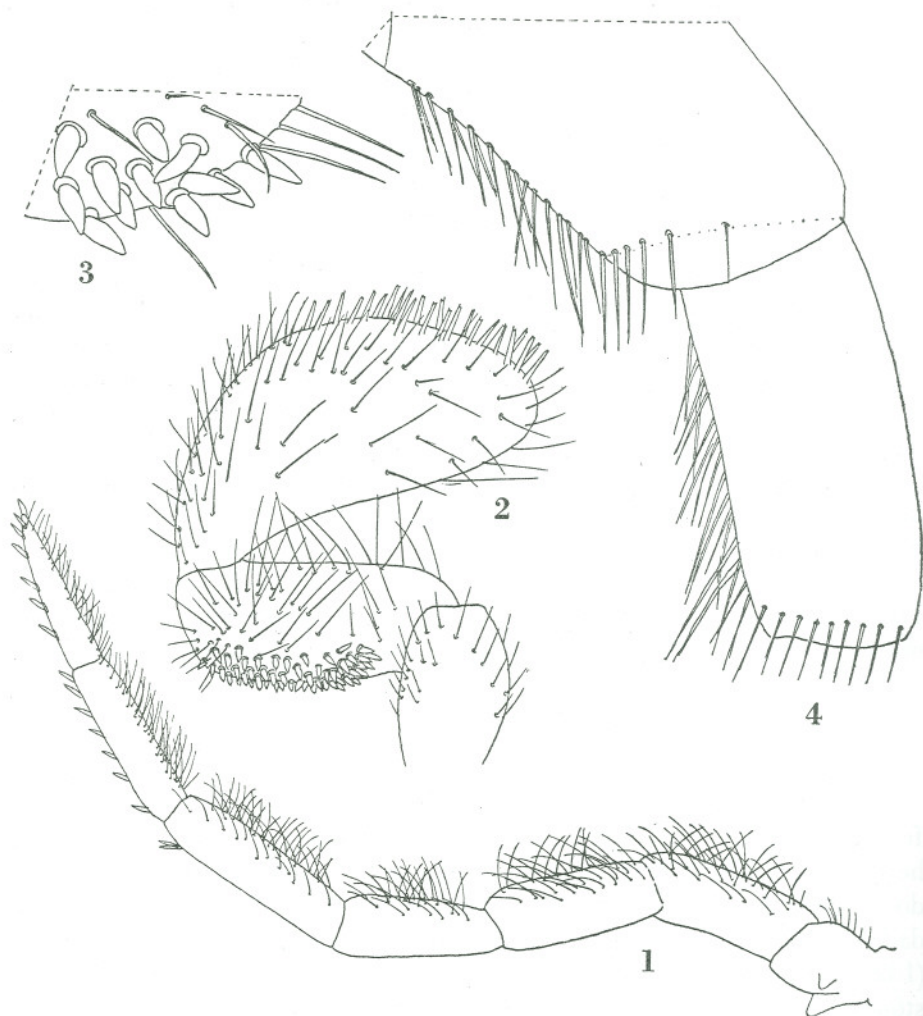
Moniez (Rev. Biol. N. France 2:1-2. 1890) describes an unidentified machilid from São Miguel which seems to agree reasonably well with the present species.

All specimens examined now are females and lack striking characters. The scale pattern is not perceptible, and the essential eye colour pattern cannot be observed; thus it is impossible to identify the material specifically.

Dilta cf. *saxicola* (Womersley)

Fig. 1.

Material examined: SÃO MIGUEL: 1 km N of Feteiras, ravine in foerna, 2.III.1957, loc. 5 (1 female); at Lagoa de Furnas, under stones in a heap of stones, 10.III.1957, loc. 22 (1 female); Tanque 1 km SE of Lagoa do Congro, in moss, 16.III.1957, loc. 33 (2 females); Caldeira das Sete Cidades at Lagoa Azul, among lichens on tree trunk, 21.III.1957, loc. 50 (1 female); River NW of Água Retorta, on the slopes of the river under stones, and under stones near the stream, 23.III.1957, loc. 57 (1 male, 3 females); SE of Furnas, Bodes Mts., 23.III.1957 (1 female); 1 km N of Povoação, Ribeira dos Lagos, 24.III.1957, loc. 60 (1 female); 1.5 km S of Maia, in a crevice, 25.III.1957, loc. 62 (1 female).—TERCEIRA: Caldeira de Guilherme Moniz, under stones in a ravine, 27.III.1957, loc. 65 (1 female).—PICO: Volc. Pico, W side, Furna de Frei Mathias, under stones in a cave, 8.IV.1957, loc. 98 (1 female).—FAIAL: Cabeça do Canto,



Figs. 1-4.—*Dilta* cf. *saxicola* (Womersley), male. 1, Maxillary palp; 2, labial palp; 3, dorsal apical angle of second segment of labial palp, higher magnification; 4, portion of fore femur, and tibia; only setae of under surface shown. — Wygodzinsky del.

Erica bush in foena, 4.IV.1957, loc. 89 (1 female).—SANTA MARIA; 2 km ENE of Almagreira., 440 m, Miradoro dos Picos, under stones and plants, 19.III.1957, loc. 39 (1 female).

Silvestri (Bull. Mus. Hist. Nat. Paris 1: 32-33. 1907) reports *Praemachilis italica* from the islet of Vilafranca. As at that time the above name was indifferently applied to various species of Dilla Strand, it is probable that Silvestri's reference was meant for the species examined now.

With exception of one specimen, all insects examined now are females. The single male agrees in its general characters with those described by Wygodzinsky (Rev. Brasil. Biol. 5(1): 69-80. 1945) for Portuguese *Dilla saxicola*. Differences are found in the distinctly wider terminal segment of the labial palp (fig. 2), the more numerous cilia on the under surface of the maxillary palp (fig. 1), and the absence of short spine-like setae on the fore and other legs (fig. 4). The females differ from those described from Portugal by the much smaller number of segments in the gonapophyses (approximately 40 vers. 55). The scale pattern, to judge from a female where it was partially preserved, does not seem to be different from that of the Portuguese insects.

The differences between continental specimens and those from the Azores are of meristic nature; it is considered that the island population probably belongs to *D. saxicola*, but that isolation may have produced a race slightly different from European populations.

Lepisma saccharina is the only lepismatid of the Azores, at least on Pico and São Miguel. Its condition as a free-living species is here correlated with the absence of other lepismatids; it would seem that lack of competition enables this normally domestic species to occupy, or perhaps re-occupy, a habitat it has forsaken over most of its range for human habitations.—*Lepisma saccharina* has been dispersed by man over most temperate climate areas of the World; its presence on the Azores is thus not significant from a biogeographical point of view.

The machilids of the Azores are not, or only subspecifically, different from actual European forms. Unless exceptionally bradytelic, these populations cannot be supposed to be descendents of ancient inhabitants of the territory now forming the Azores; their lack of any considerable degree of distinctiveness can better be explained through the hypothesis of their relatively recent arrival on the islands with the consequent lack of

time for differentiation. Endemic species of *Dilta* do exist in other parts of Macaronesia: *D. lundbladi* Agrell on Madeira and *D. altenai* Wygodzinsky in the Canary Is. If other conditions are supposed to be equal, a larger amount of time must have gone by since the arrival of the first *Dilta* on the islands mentioned. Another fact that suggests the condition of the Azores populations as occupying a secondary area in relation to the main body of the species, is the apparently parthenogenetical condition of *Lepismachilis* sp. and the extremely low rate of males of *Dilta* cf. *saxicola*. The phenomenon of geographical parthenogenesis correlated with outlying or secondarily dispersed populations is well known in many insects and also the Thysanura (p. ex. *Gastrotheus sumatranus* Silvestri and *Namunukulina funambuli* Wygodzinsky) and Machilida (*Trigoniophthalmus alternatus* [Silvestri] and *Dilta hibernica* [Carpenter]).

It is concluded from the available evidence that the Thysanura and Machilida of the Azores are relatively recent arrivals and not specifically different from European forms.