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Some morphological characteristics of *Culex deserticola*, a recent addition to the Spanish fauna (Diptera: Culicidae)

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Abstract

Culex (Maillotia) deserticola Kirkpatrick, 1924, a widely distributed species throughout the southern Mediterranean Subregion, from Morocco to Iran and southwestern Asia, is recorded formally for the first time in Europe, Zaragoza area, Spain. A few notes on the taxonomy and ecology of this species are included and the male genitalia and details of the fore-, mid- and hindtarsi of the Zaragoza population are illustrated.

Introduction

In the course of mosquito studies carried out during 1993-95 in the Ebro river valley, Zaragoza area, NE Spain, a few specimens of *Culex deserticola* were preserved in spirit for further study. This record was conveyed to interested workers in a personal communication by one of us (JL) and was noted in the Distribution Chart of European Mosquitoes (Snow & Ramsdale, 1999). Having recently examined the genitalia of the males, we are able to confirm the identification as *Culex (Maillotia) deserticola* Kirkpatrick, 1924, a new mosquito record for Spain.

Material examined

Four males in alcohol, collected from El Burgo de Ebro, Zaragoza area, Spain, at about 41°35'N and 0°50'W, during June and July 1993, by Lucientes, Blasco-Zumeta and Osácar.

Taxonomy, distribution, morphology and ecology

Culex deserticola was described from Wadi No'oth, North Galala, Egypt (Kirkpatrick, 1924). It was placed by Edwards (1932), with *Cx. hortensis* Ficalbi, *Cx. impudicus* Ficalbi, *Cx. territans* Walker (as *Cx. apicalis* Adams) and others, in group A of subgenus *Neoculex* Dyar, 1905, wheras *Maillotia* Theobald, 1907 and *Eumelanomyia* Theobald, 1910 were treated as junior synonyms of *Neoculex*.

Sirivanakarn (1971), in his revision of subgenus *Neoculex*, based principally on male genitalia, resurrected *Maillotia* and *Eumelanomyia* from synonymy and synonymized *Mochtogenes* Edwards, 1930 with *Eumelanomyia*. According to this author, *Cx. deserticola* belongs to the Territans Group of subgenus *Neoculex*, (Edwards group A, in part), with a total of 11 species, 7 of which are widely distributed in the Holarctic Region from North America to Japan, namely *Cx. apicalis*, *Cx. boharti* Brookman & Reeves, *Cx. reevesi* Bohart, *Cx. arizonensis* Bohart, *Cx. derivator* Dyar & Knab, *Cx. rubensis* Sasa & Takahashi and *Cx. territans*. The other 4 species are endemic to the Mediterranean Subregion (of the Palaearctic): *Cx. deserticola*, from North Africa and southwestern Asia, *Cx. judaicus* Edwards, from Palestine, *Cx. impudicus*, occurring throughout the Subregion, and *Cx. martinii* Medschid, mainly an eastern Mediterranean species.

More recently, Harbach (1985), studying the mosquitoes of southwestern Asia and Egypt, concluded that *Cx. deserticola* should be placed in subgenus *Maillotia*, with *Cx. hortensis*, whereas *Cx. impudicus* and *Cx. territans* remain in *Neoculex*.

In southern Europe, along the northern border of the Mediterranean, *Cx.(Maillotia) h. hortensis* and *Cx. (Neoculex) impudicus* are quite common mosquitoes, whereas *Cx. (Neoculex) territans* is relatively rare, becoming more common northwards. The new locality record for *Cx. deserticola* extends the geographical distribution of the species to southern Europe (Fig. 1).

The photomicrographs (Figs 2-9) show some morphological details of the genitalia and legs of the males captured in Spain. The genitalic characters are in good agreement with known descriptions, namely those of Kirkpatrick (1925), Martini (1929-31), Senevet (1949) and Senevet & Andarelli (1959). Of special note, however, is the existence of an aedeagal bridge (Fig. 2), the fact that the digitiform projections arise from the internal borders of the paraprocts (Fig. 3), the finely barbed condition of the four small distal appendices of the subapical lobe (Fig. 4), and the well developed lobes of tergum IX, with 10-12 moderately developed setae (Fig. 5).

Regarding the legs, it is also worthy to note that both claws of the foretarsus are enlarged and toothed (Fig. 6, only one claw focused), the spiniform setae at the base of 5th tarsomere, and the prominent sensilla on the internal border. The ungues of the midtarsus are small and smooth (Fig. 7); a few strong, modified setae and a moderately developed pecten are present at the apex of hindtibia (Fig. 8); and the ungues of the hindtarsus are small, non-toothed and slightly serrated (Fig. 9).

Two of the males were captured in a wild rabbit burrow by means of an exit-trap; the other two with a CDC type light-trap. All the males are from the same locality in the central plain of the Ebro river, NE Spain, a semiarid region with a low mean annual rainfall of about 350 mm, very high summer temperatures and very low temperatures in winter.

Conclusions

The occurrence of *Culex deserticola* in Spain adds a new *Maillotia* to the culicid fauna of southern Europe and reinforces the known affinities between the mosquito faunas of Europe and northern Africa.

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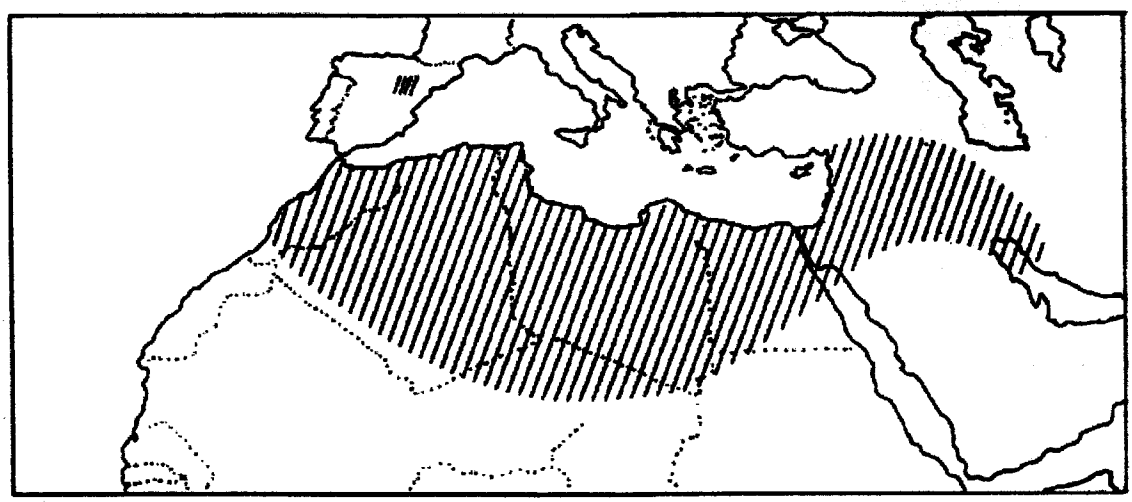

Figure 1. Approximate distribution of *Culex deserticola* showing the new record in the Iberian Peninsula.

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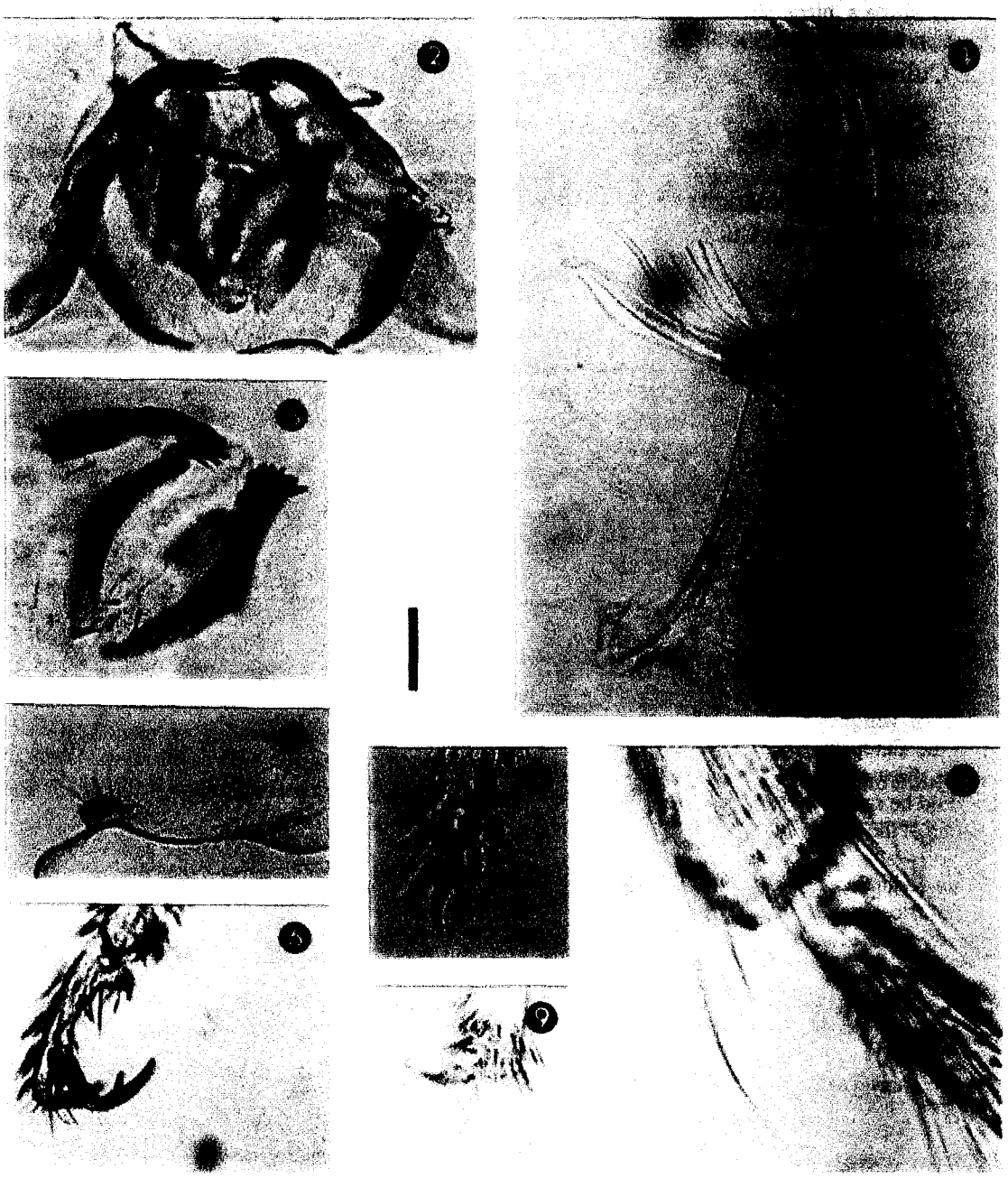

Figures 2-9 *Culex deserticola* male, Spain. 2) Basal parts of male genitalia. 3) Paraprocts, showing digitiform processes. 4) Gonocoxite. 5) Tergum IX, showing prominent lobes. 6) 5th tarsomere of foreleg, showing large toothed unguis, modified setae and sensilla. 7) 5th tarsomere of midleg, showing small, non-toothed ungues. 8) Hindtibia, showing modified setae and delicate pecten. 9) 5th tarsomere of hindleg, showing small, minutely serrated unguis.