

## *Culicoides* from Greece in relation to the spread of bluetongue virus

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### RÉSUMÉ

MELLOR (P. S.), JENNINGS (M.), BOORMAN (J. P. T.). — *Culicoides* en Grèce et sa relation avec la dissémination du virus de la fièvre catarrhale. *Rev. Elev. Méd. vét. Pays trop.*, 1984, 37 (3) : 286-289.

Vingt espèces de *Culicoides* ont été prises à des pièges lumineux installés dans trois régions de la Grèce métropolitaine pendant le mois de juin 1983. Parmi elles, 9 espèces étaient complètement nouvelles pour la Grèce et 19 pour la Grèce métropolitaine.

*C. imicola*, le principal vecteur de la fièvre catarrhale en Afrique et au Moyen Orient, n'a pas été identifié mais *C. schultzei* et *C. obsoletus*, considérés comme de possibles vecteurs ont été trouvés. C'est la première constatation de la présence de *C. schultzei* en Europe.

*Mots clés* : *Culicoides* - Fièvre catarrhale - Grèce.

### SUMMARY

MELLOR (P. S.), JENNINGS (M.), BOORMAN (J. P. T.). — *Culicoides* from Greece in relation to the spread of bluetongue virus. *Rev. Elev. Méd. vét. Pays trop.*, 1984, 37 (3) : 286-289.

Twenty species of *Culicoides* were recorded from light trap collections made in three regions of mainland Greece in June 1983. Nine species are completely new to Greece while 19 species are new to the mainland.

*C. imicola* the major vector of bluetongue virus in Africa and the Middle East was not recorded but *C. schultzei* and *C. obsoletus* which are considered to be potential bluetongue vectors were present. *C. schultzei* is reported for the first time in Europe.

*Key words* : *Culicoides* - Vector - Bluetongue - Greece.

### INTRODUCTION

Historically the mediterranean sea has provided a barrier to the northward spread of bluetongue virus (BTV) from its ancestral home in Africa. Nevertheless, this barrier is not invulnerable. In the west, during the late 1950s the virus « leapfrogged » the straits of Gibraltar and caused extensive and severe damage to the sheep industries of Spain and Portugal (11). The last outbreaks from the Iberian Peninsula were reported in Spain in 1960 (6). In the East, BTV is now endemic in Israel and probably also in Turkey where outbreaks of disease have been reported in 1977, 1978 and 1979 (8) and where serological evidence indicates the continued presence of the virus (TAYLOR, personal commu-

nication). An outbreak of BTV virus occurred recently in the Greek Island of Lesbos (10, 18) and antibodies to the virus have been found in animals in Rhodes (4).

The major vector of BTV in Africa and the Middle East is *Culicoides imicola* (6, 3, 4 [*pallidipennis* = *imicola*]) and the presence of this midge has recently been established for the first time in Spain (11), Turkey (8) and on Lesbos (1). However, no records exist with respect to this midge or indeed any other likely bluetongue vector in mainland Greece, a country whose geographical position indicates that it may be at risk in future BTV epidemics. This paper reports the results of light trap collections of *Culicoides* biting midges in three areas of mainland Greece during June 1983.

## MATERIALS AND METHODS

Insects were collected with three light traps operated from the mains supply via transformers from dusk to dawn. A single Monks Wood trap was used (17) and two « home made » traps of a similar design. The home made traps each used a 35 watt car head lamp bulb as the source of illumination.

The insects were collected into a weak solution of detergent and preserved in 5 p. 100 formalin. On return to the U.K., *Culicoides* midges were sorted and identified under binocular microscopes. Where necessary, individual midges were slide mounted in phenol balsam. Identifications were made by comparison with specimens in the collections of the Animal Virus Research Institute, or the British Museum or by reference to types.

Collections were made at the following localities :

(1) Thessalonika District 40° 40'N, 23° 30'E (near Apollonia village). Cattle farm, 3 trap nights, sheep farm, 5 trap nights.

(2) Larissa District 39° 40'N, 22° 40'E (Sikourio and Kastri villages). Cattle farm, 5 trap nights, sheep farm, 3 trap nights.

(3) Attica south of Athens 37° 50'N, 23° 50'E (Koropi village). Cattle farm, 3 trap nights, sheep farm, 5 trap nights.

## RESULTS

A total of 1 352 *Culicoides* were collected in Greece ; of these, 16 specimens remain still to be identified. The results of the catches from the various localities are given in Table 1. Twenty species of *Culicoides* have been identified so far and of these nine (*C. puncticollis*, *saevanicus*, *fagineus*, *cubitalis*, *fascipennis*, *odibilis*, *dzhafarovi*, *sejfadmei* and *schultzei*) are new to Greece and the Greek Islands (1). The remaining species with the exception of *C. obsoletus* are recorded for the first time from mainland Greece. *C. obsoletus* was collected in the Athens area in 1982 by BOOR-

TABLE N° 1 - *Culicoides* species collected at light in Greece during June 1983

Species	LOCATION						Total collected	
	Thessalonika District		Larissa District		South Attica		♂	♀
	Cattle farm	Sheep farm	Cattle farm	Sheep farm	Cattle farm	Sheep farm		
<i>C. pulicaris</i>	45	11	13	7	0	0	1	75
<i>C. newsteadi</i>	29	22	121	59	1	2	3	231
<i>C. puncticollis</i>	89	92	469	1	0	0	49	454
<i>C. circumscriptus</i>	13	54	67	8	1	0	8	135
<i>C. obsoletus</i>	58	28	5	30	4	0	8	117
<i>C. cataneii</i>	0	2	0	4	0	0	3	3
<i>C. saevanicus</i>	0	37	54	16	0	3	9	101
<i>C. fagineus</i>	1	2	0	7	0	0	0	10
<i>C. cubitalis</i>	0	1	0	1	0	0	0	2
<i>C. maritimus</i>	0	1	3	2	0	0	1	5
<i>C. lallae</i>	13	15	0	7	0	0	0	35
<i>C. shaklawensis</i>	0	0	0	1	0	0	0	1
<i>C. pallidicornis</i>	0	0	0	1	0	0	0	1
<i>C. fascipennis</i>	0	17	0	0	0	0	2	15
<i>C. kurensis</i>	3	3	0	0	0	0	4	2
<i>C. odibilis</i>	23	37	0	0	0	0	22	28
<i>C. longipennis</i>	3	0	0	0	0	0	2	1
<i>C. dzhafarovi</i>	0	3	0	0	0	0	1	2
<i>C. sejfadmei</i>	0	1	0	0	0	0	0	1
<i>C. schultzei</i>	0	0	0	0	0	4	1	3
spp. indeterminate	1	14	1	0	0	0	0	16

MAN and WILKINSON (unpublished) and has now also been recorded from Larissa and Thessalonika districts.

## DISCUSSION

Bluetongue virus has been isolated from *C. obsoletus* in Cyprus (13). The wide spread presence of this midge in mainland Greece should therefore be taken into account in assessing risk to livestock should BTV gain entrance to this country.

The presence of *C. puncticollis*, a close relative of *C. variipennis* the North American vector of BTV is probably less important than may have previously been thought since it has been shown that an Israeli strain of this midge is insusceptible to oral infection with BTV (12). Nevertheless, JONES and FOSTERS' work (9) on *C. variipennis* has shown that strains of the same midge species can vary widely in vector competence, therefore, *C. puncticollis* with its relationship to *C. variipennis* and its cattle-sheep host preferences (14, 2) is still to be regarded with suspicion in a bluetongue outbreak if the vector is not immediately obvious.

*C. schultzei* is recorded in mainland Greece and indeed in Europe for the first time. This midge bites cattle (7, MELLOR, unpublished) and probably sheep (8), and it breeds in and around stock yards. It is a common midge over much of Africa, the Middle East and Turkey. Bluetongue virus type 16 has been isolated from a pool of mixed *Culicoides* species of which *C. schultzei* gp. midges made up 63,7 p. 100 and *C. imicola* 25,4 p. 100 (3). More recently an orbivirus, although probably not BTV itself has been isolated from *C. schultzei* gp. midges in the Sudan (MELLOR *et al.* in press). A similar virus was also recovered from the blood of cattle in the same area (HERNIMAN, personal communication). In

the absence of *C. imicola* during an outbreak of BTV, *C. schultzei* gp. midges would be strongly suspected as being vectors.

The absence of *C. imicola* from light trap collections of *Culicoides* taken in mainland Greece does not, of course, mean that this midge is not present. It may exist in areas other than those sampled, or at different times of the year or it may have a restricted distribution. Records of *C. imicola* from Turkey and Spain suggest that this midge may be present as a permanent resident as far north as 40° ; on this basis one might expect it to be present in Southern Greece or at least to be able to exist there for several seasons should it be introduced. Long range movement of midges on the wind have been shown to be responsible for BTV epidemics in Portugal and Cyprus (15, 16) and the possibility exists that this species could be introduced into Greece at any time from North Africa, where it is known to be abundant. There is a need therefore for continuing surveillance at selected sites in Southern Greece to give a reliable picture of the status of *C. imicola* in this country.

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## RESUMEN

MELLOR (P. S.), JENNINGS (M.), BOORMAN (J. P. T.). — *Culicoides* en Grecia y su relación con la diseminación del virus de la lengua azul. *Rev. Elev. Méd. vét. Pays trop.*, 1984, 37 (3) : 286-289.

Se capturaron 20 especies de *Culicoides* con trampas luminosas instaladas en tres regiones de Grecia metropolitana durante el mes de junio de 1983. De ellas, 9 especies eran nuevas en Grecia y 19 en Grecia metropolitana.

No se identificó *C. imicola*, principal vector de la lengua azul, en África y Oriente Medio sino se encontraron *C. schultzei* y *C. obsoletus* considerados como vectores posibles.

Se nota por primera vez la presencia de *C. schultzei* en Europa.

*Palabras Claves* : *Culicoides* - Vector - Lengua azul - Grecia.

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