

Mosquito records from the Isles of Scilly

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Abstract

Previous records of Culicidae on the Isles of Scilly are discussed. Only the earlier records of *Anopheles plumbeus* and *Ochlerotatus geniculatus* are considered to be valid. The additional presence of *Culex pipiens* is reported and its larval collection site is described.

Introduction

The Scilly Archipelago, comprising some 145 islands, islets and exposed rocks covering an area of about 130 km², are the exposed summits of a chain of granite intrusions of overlying submarine slate extending from the British mainland located some 45 km to the north-east. On some of the isles much of the granite is overlaid with peaty or sandy soil. Six isles, St Martin's (220 ha), St Mary's (640 ha), St Agnes and Gugh, which are joined at low tide by an exposed sandbar (140 ha), Bryher (120 ha) and Treco (280 ha) are inhabited.

The largest and most populous of the isles, St Mary's, is connected to the mainland by air and by a 64 km sea link to the port of Penzance. Communication with and between the other isles is by launch. The adjacent isles of Treco and Bryher consist of rocky, exposed upland facing the open ocean and more sheltered low-lying parts looking across the approximately 2 km, or less, wide roadstead to St Mary's. Shelter from the Atlantic winds has been considerably improved in the low-lying part of Treco by extensive planting of trees. This part of the island houses the Abbey Botanical Gardens containing a wide range of exotic plants, reed fringed lakes and some farmed land.

Tourism and horticulture are the mainstays of the economy. The equable climate, with only infrequent light winter frosts, allows production of early flowers, fruit and vegetables for the mainland market. Because of the limited areas available for cultivation and the exposed location of the islands, the diminutive fields are sheltered by high hedge windbreaks.

The first published record of insects on the Isles of Scilly was 165 years ago (Holme, 1837). Thirty-five years later, Walker (1872) published the first list of Diptera, which included one species of mosquito, *Culex detritus*? (now *Ochlerotatus detritus*). The question mark after the species name suggests that Walker was unsure of his identification and this record must be regarded as doubtful. *Ochlerotatus detritus*, a salt marsh species, is a persistent pest wherever it occurs, and it is inconceivable that, if present, it could escape notice for more than a century, and especially in recent years when tourism has become the mainstay of the economy.

Despite the many later records of Diptera summarised by Smith & Smith (1983), bringing the list of Scillonian species to 260, the only additional reports of mosquitoes are those of *Ochlerotatus geniculatus* and *Anopheles plumbeus*. The occurrence of *Ochlerotatus geniculatus* (as *Aedes geniculatus*) in the Scilly Isles noted in the distributional atlas of British mosquitoes (Snow *et al.*, 1998) is based on the record of *Finlaya geniculata* provided by Lang (1920): 'Scilly; vi, 1919. *Coll'd. K.G. Blair.*' Since *Oc. geniculatus* is an easily recognised species, we regard this as a valid occurrence record. Likewise, the record of *Anopheles plumbeus* on St Mary's by Smith (1963) must be regarded as valid. The presence, on Treco, of another species, found on 20 August 2002, is recorded here.

Identification

Adults reared from larvae (exuviae not retained) were identified as *Culex (Culex) pipiens* L. using the keys of Cranston *et al.* (1987) and Snow (1990). To confirm this identification (to ensure that the mosquitoes were not specimens of *Cx. torrentium* Martini without prelar scales or a species new to Britain), the genitalia of two males were dissected. The genitalia were unmistakably those of *Cx. pipiens* based on the neotype description of this species by Harbach *et al.* (1985), and the keys of Cranston *et al.* (1987) and Snow (1990). Three females and two males (dissected genitalia on microscope slides) with the following label data are deposited in The Natural History Museum (BMNH), London: "UNITED KINGDOM: England, Cornwall, Scilly Isles, Treco. 20.viii.2002. C. Ramsdale." "reared from pool on plastic sheeting over strawberry field."

Description of the larval collection site

Rainfall occurs in the Scilly Isles every month, but is less than on mainland Britain (Smith & Smith, 1983). Apart from relatively heavy precipitation on 2 July, 31 July and 18 August 2002 only short, light showers were recorded during the seven week period preceding a two-day visit to Tresco and Bryher by one of us (CDR) on 20-21 August 2002 (Table 1). No ground pools in the predominantly sandy soil were found. However, though most cultivated land had been harvested and was being prepared for the next planting, two small, gently sloping fields (49°57.00'N, 6°19.64'W) on Tresco were still completely covered with plastic sheeting. The lower ends of the sheeting held small, obviously long-standing pools, containing third- and fourth-instar *Culex* larvae and pupae and growths of green algae. Heavy rainfall would have caused overflow on to the grassy soil below the lower ends of the sheeting. Late July and August of 2002 were particularly sunny and evaporation must have had a considerable effect on these pools. However, small amounts of rain, plus heavy dews coating the sheeting at night, had evidently sufficed to maintain water levels through the warmest summer months.

Table 1. Rainfall recorded at Tresco Abbey Gardens meteorological station during the seven weeks immediately prior to the collection of *Culex pipiens* larvae.

<u>Day (2002)</u>	<u>Rainfall (mm)</u>
1 July	0.2
2 July	18.5
4 July	4.9
8 July	3.7
10 July	1.3
14 July	0.3
24 July	0.2
25 July	0.2
26 July	0.8
30 July	0.6
31 July	13.1
4 August	0.4
6 August	0.8
8 August	4.2
11 August	3.2
14 August	0.5
18 August	19.8
19 August	0.3

References

- Cranston, P.S., Ramsdale, C.D., Snow, K.R. & White, G.B. (1987) Keys to the adults, male hypopygia, fourth-instar larvae and pupae of the British mosquitoes (Culicidae) with notes on their ecology and medical importance. *Freshwater Biological Association Scientific Publication* **48**, 1-152.
- Harbach, R.E., Dahl, C. & White, G.B. (1985) *Culex (Culex) pipiens* Linnaeus (Diptera: Culicidae): concepts, type designations, and description. *Proceeding of the Entomological Society of Washington* **87**, 1-24.
- Holme, F. (1837) Notice of the Coleopterous insects observed in the Scilly Islands in July and August, 1836. *Transactions of the Entomological Society of London* **2**, 58-68.
- Lang, W.D. (1920) *A Handbook of British Mosquitoes*. British Museum (Natural History), London.
- Snow, K.R. (1990) *Mosquitoes*. Naturalists' Handbooks, Richmond Publishing Co. Ltd, Slough, England.
- Snow, K.R., Rees, A.T. & Bulbeck, S.J. (1998) *A provisional atlas of the mosquitoes of Britain*. Occasional Publication. University of East London.
- Smith, K.G.V. (1963) A provisional list of the Diptera of the Isles of Scilly, with notes on other orders, and an entomological bibliography. *The Entomologist* **96**, 225-236.
- Smith, K.G.V. & Smith, V. (1983) *A Bibliography of the Entomology of the Smaller British Offshore Islands*. E.W. Classey Ltd, London.
- Walker, F. (1872) Notes on the insects of the Scilly Isles. *The Entomologist* **6**, 3-6.