

Notes on the *Culiseta* Species (Diptera: Culicidae)
of Newfoundland, with Report of a New Record

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ABSTRACT. *Culiseta minnesotae* Barr is reported from insular Newfoundland for the first time. Adult females of this locally-rare species were caught in the spring and late summer in light traps baited with dry ice. This brings to four the number of *Culiseta* species known to occur on the island. Observations on the biology of *Cs. impatiens*, *Cs. melanura* and *Cs. morsitans* are also reported.

Mosquitoes of the genus *Culiseta* have received attention in North America due primarily to their potential as vectors of arboviruses causing illnesses in humans (Morris et al. 1973, Chamberlain et al. 1955). Previous surveys have revealed the presence of three *Culiseta* species on the island (Pickavance et al. 1970, Nielsen and Mokry 1982a) with an additional species, *Culiseta alaskaensis* (Ludlow), in Labrador (Haufe 1952, author's data). In Newfoundland arbovirus surveillance has concentrated on the *Aedes* species (Mokry 1984, Mokry et al. 1984) with relatively few examples of *Culiseta* being caught. The following work summarizes observations on this genus made during an arbovirus surveillance program from 1980-1983. Included where appropriate are the results of ovarian dissections performed during a study on the adult *Aedes* population structure (Mokry 1984), but not reported there.

Culiseta impatiens (Walker). In general this species conforms to the previous observations noted by Frohne (1951, 1954a) on its early emergence of overwintered females and choice of larval habitats. In Newfoundland larvae are present from June until adult emergence in late August when both males and females were caught in light traps. Most females then caught were mated, filled with red-brown fat-bodies, and uniformly refused to feed on blood. Though reportedly long-lived (Frohne 1954b), adults generally disappeared from our collections after early July, and the oldest female examined in Newfoundland has been 2-par.

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Culiseta melanura (Coquillett). This species was only recently reported from a single larval site in Newfoundland (Nielsen and Mokry 1982b). Since then several other larval sites have been located in our study area; all are similar in that they are deep, well-hidden in the roots of stunted spruce, small (1-5 litres) and contain only a handful of larvae of this species in association with *Cs. morsitans*. Females were sometimes collected in bird-baited traps and, rarely, in dry ice baited light traps. While this species may produce two generations or broods per year (Morris et al. 1980), its occurrence here is too scattered and limited to allow us to confirm this at present.

Culiseta minnesotae Barr. (New record) Like *Cs. melanura*, this species is rare in Newfoundland. Adult collections have been limited to less than a dozen specimens per summer, usually caught early in the spring. Although relatively little is known about this species, adult females apparently over-winter (Barr 1957). In Newfoundland females have been caught with *Cs. impatiens* in May and late August in light traps. This species is reported to breed in cattail marshes (Price 1961) but in Newfoundland larvae are probably found in deep bog pools in association with *Cs. melanura*. Pinned specimens have been deposited in the Canadian National Museums collection.

Culiseta morsitans (Theobald). Larval surveys indicated that this species is common and wide-spread (Nielsen and Mokry 1982a), though adults are not often taken. We have on occasion collected this species in both bird-baited traps and light traps. Our collection data have consistently shown two peaks of adult activity, the first at the end of June and early July making both larvae and adults contemporaneous with those of *Aedes canadensis* (Mokry 1984), and the second in mid-August. As males are collected at both times, and as nullipars appear simultaneously with the second peak, we conclude that this species is bivoltine in Newfoundland. While bivoltism confirms the observations of Morris et al. (1981) and Lewis and Bennett (1979), there are other reports that this species is univoltine (LePrince and Lewis 1982, Price 1961, Morris et al. 1976). Certainly this species is long-lived. Morris et al. (1976) reported that 3% of females reached the 3-par age while here we have seen at least one 4-par female (caught, 25 August, 1983).

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