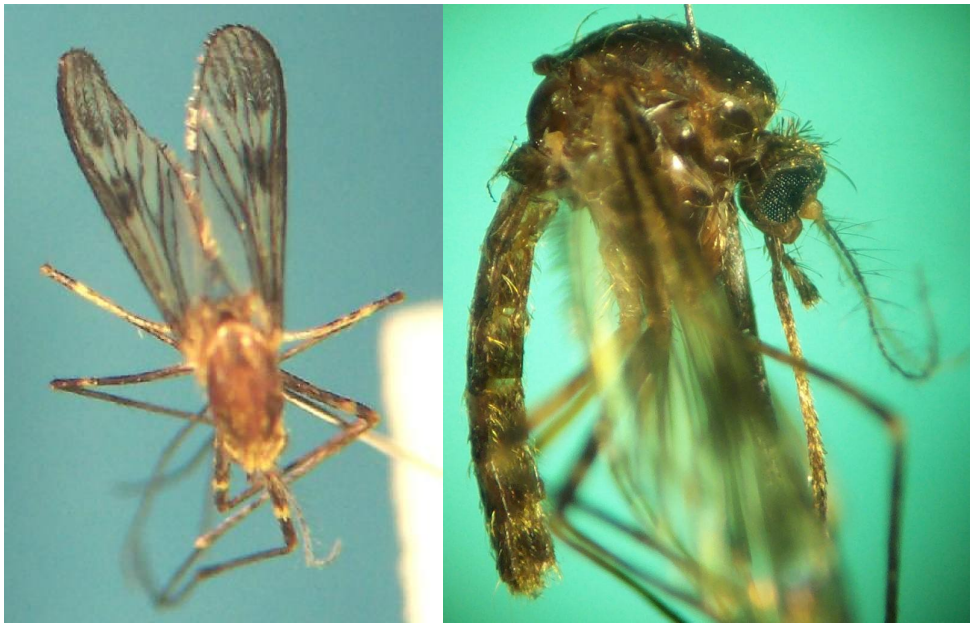
NEW ZEALAND BIOSECURE
Entomology Laboratory
A DIVISION OF SMS SOUTHERN MONITORING SERVICES LIMITED

Culiseta (Climacura) tonnoiri (Edwards)

No common name

NZ Status: endemic



Vector and Pest Status

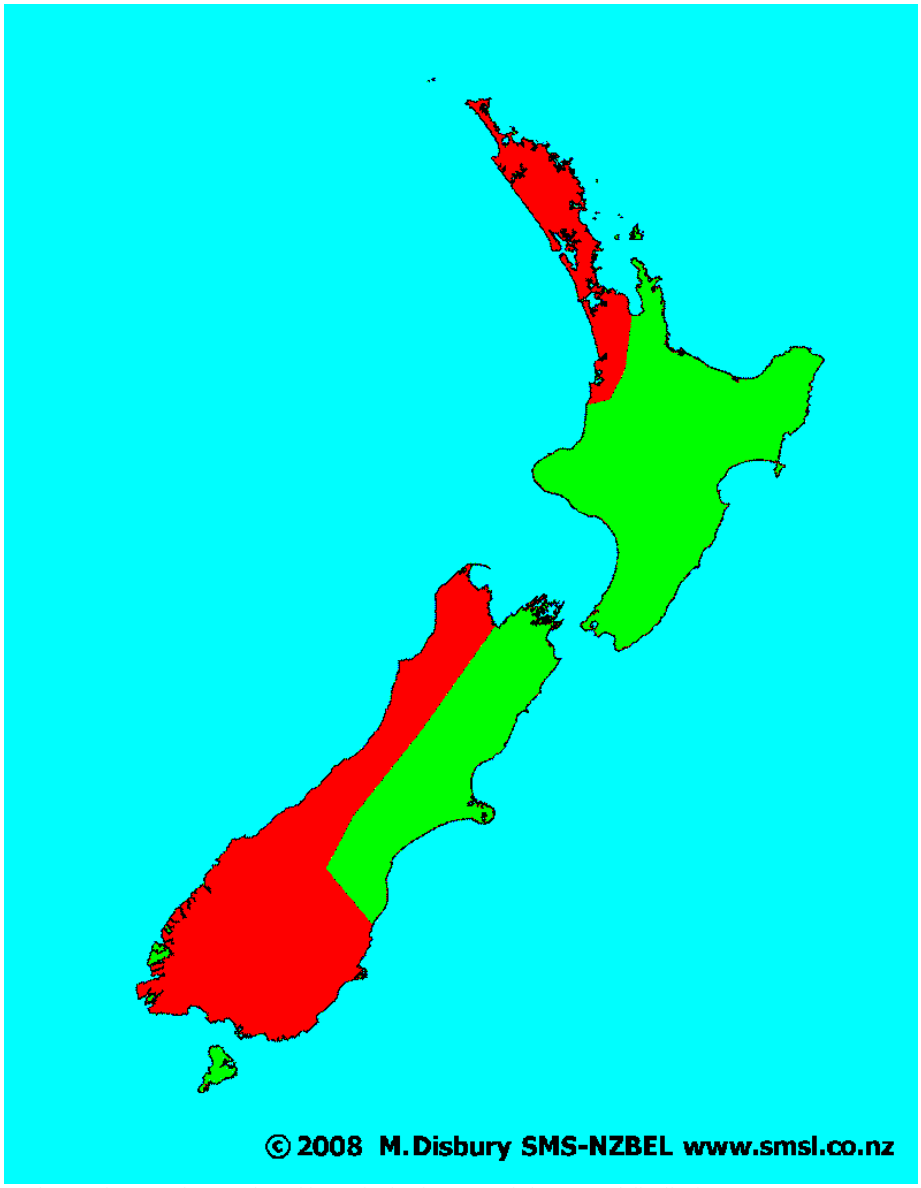
Culiseta tonnoiri is the principal vector of Whataroa virus. Whataroa virus is an endemic arbovirus circulated by mosquitoes to bird populations in Westland (Dumbleton, 1968; Weinstein *et al*., 1997). Any syndrome this virus causes the birds seems to be clinically unapparent and although there is some evidence to suggest man can be infected with the virus (Hogg *et al*., 1963; Maguire *et al*., 1967; Pillai, 1968), this is not conclusive (Derraik, 2005).

Reovirus type 3 has also been isolated from this species (Crosby, 1978) and it has been shown to transmit the Coxsackie A6 virus in the laboratory, although it is not likely to be an efficient vector in nature (Lee *et al*., 1988).

Culiseta tonnoiri is regarded as a pest when it is present in very large numbers (Dumbleton, 1968) and is known to bite a wide range of hosts including humans (Holder *et al*., 1999).

Geographic Distribution

Culiseta tonnoiri is an endemic species first collected by A.L. Tonnoiri at Waiho in 1922 and later described by Edwards in 1925 (Laird, 1996). It can be found in the North Island in North Auckland and the Waitakere ranges and also in Westland, Southland and Otago in the South Island (Belkin, 1968; Lee *et al*., 1988).



NB. This map denotes the general areas where this species has been recorded, not actual distribution.

Incursions and Interceptions

Culiseta tonnoiri has not been intercepted at New Zealand's borders.

Taxonomy

Originally named *Theobaldia tonnoiri* by Edwards in 1925 (Taylor, 1934), the name *Theobaldia* was replaced with *Culiseta* to now be classified as *Culiseta tonnoiri* within the subgenus *Climacura* (Belkin, 1968).

New Zealand has two recognised members of the genus *Culiseta* within the subgenus *Climacura*; *Cs. (Climacura) tonnoiri* and *Cs. (Climacura) novaezelandiae*. Adult females of both *Culiseta* species have conspicuous spots of dark scales on their wings

(Nye and McGregor, 1964; Belkin, 1962) separating them from all other New Zealand mosquitoes. *Cs. tonnoiri* adults are generally separated from *Cs. novaezelandiae* by location only.

Culiseta tonnoiri larvae have a long narrow siphon with four or more pairs of tiny single hairs (Miller and Phillipps, 1952). The anal gills are slightly constricted 1/3 to 1/2 the length from the base and there is only a single row of comb scales (Dumbleton, 1965; Belkin, 1968) which distinguishes them from other New Zealand species.

Habits and Habitat

Culiseta tonnoiri may be found in forested areas experiencing high rainfall and high humidity, often within valleys in kauri, beech or podocarp forest (Dumbleton, 1965).

Eggs are laid in very slow moving stream margins, pools or backwaters and temporary or permanent ground pools which are shaded by dense canopy (Miller and Phillipps, 1952; Belkin, 1968). The water is usually rich in decaying organic matter which the larvae will hide amongst when alarmed (Belkin, 1968; Lee *et al.,* 1988).

Adult females are most abundant in January and February, breeding in the summer, and appear to over winter as gravid females (Dumbleton, 1965). But, small numbers have been recorded to be active and feeding throughout the year, even in winter (Pillai, 1968). Larvae have been found year round, including in winter pools of only 4.5°C (Pillai, 1968). At 13°C larval development can be completed within three months (Pillai, 1968), this suggests that populations may be able to persist over winter and could aid in circulating an endemic arbovirus (Pillai, 1968).

Culiseta tonnoiri will bite a wide variety of hosts, including man, cattle, horses, pigs, sheep, rabbits, possums, poultry (Holder *et al*., 1999), penguins (Crosby, 1978) and other birds (Dumbleton, 1965). Peak biting occurs over summer and autumn, after sunset (Belkin, 1968; Crosby, 1978; Holder *et al*., 1999), though some will also bite during the day in well shaded areas (Pillai, 1968).

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