



NEW ZEALAND BIOSECURE
Entomology Laboratory



Culex (Culex) pervigilans (Bergroth)

Vigilant mosquito

NZ Status: endemic



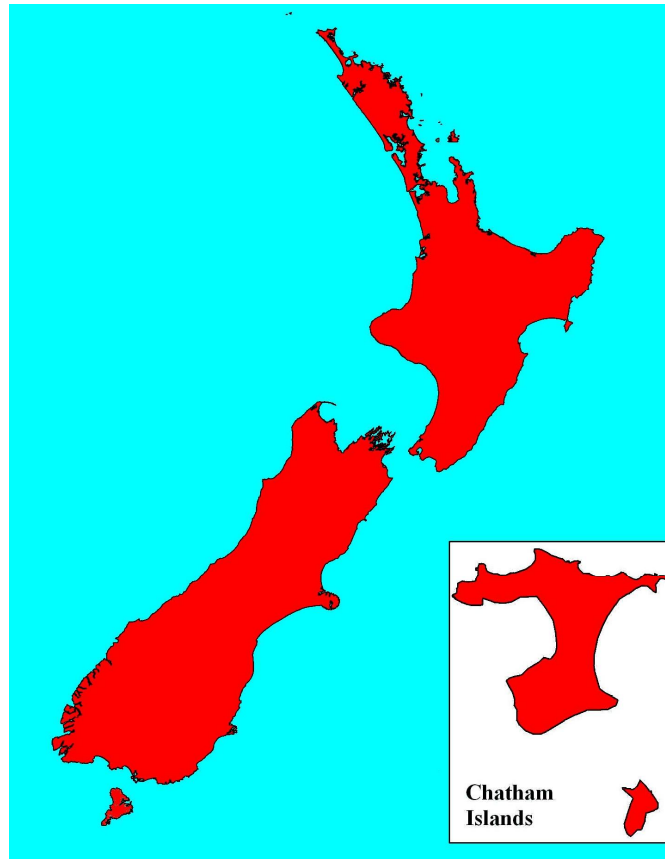
Vector and Pest Status

Culex pervigilans is the most common domestic pest mosquito in New Zealand (Belkin, 1968; Holder *et al.*, 1999). Its primary hosts are birds but will bite larger mammals including humans and cattle (Holder *et al.*, 1999; Derraik *et al.*, 2005).

Cx. pervigilans is a known vector of Whataroa virus in Westland (Dumbleton, 1968) and reovirus type 3 has also been isolated from this species (Holder *et al.*, 1999). It may also be a vector for avian malaria (Holder *et al.*, 1999).

Geographic Distribution

Culex pervigilans is an endemic species first collected and described by E. Bergroth in 1889 (Belkin, 1968). It is the most common and widespread mosquito in New Zealand (Belkin, 1968). It may be found throughout the North and South Islands, Chatham Island, Auckland Islands and also the Kermadec Islands (Belkin, 1968; Dumbleton, 1968; Sandlant, 2002).



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

Incursions and Interceptions

Culex pervigilans has not been intercepted at New Zealand's borders.

Taxonomy

Culex pervigilans is part of the Pervigilans complex of the Pipiens group (Smith & Fonseca, 2004). It is superficially similar to *Culex quinquefasciatus* and other members of the *Culex pipiens* complex (Belkin, 1962), which it was once believed to belong to (Smith & Fonseca, 2004).

The simplest way to differentiate *Cx. quinquefasciatus* and *Cx. pervigilans* is by the presence of more or less conspicuous dark spots on the underside of the abdomen in *Cx. pervigilans* (Edwards, 1924; Belkin, 1962). However, further problems with separating these two species may be encountered if evidence of hybridisation is discovered (Belkin, 1968).

Although there is much geographical differentiation between populations of *Cx. pervigilans* they are still recognised as a single species and are still distinct from the other members of the *Culex pipiens* group (Belkin, 1968).

Belkin (1968) reported the existence of a *Culex pervigilans* complex (Belkin, 1968) which included *Cx. asteliae* and *Cx. rotoruae*, with all three species being highly similar in both the larval and adult forms (Belkin, 1968). Molecular studies to examine the relationships of these and other New Zealand species are currently underway (Cane, unpub. data, 2008).

Habits and Habitat

Culex pervigilans is able to breed in a wide variety of habitats, almost anywhere there is water collecting (Baber, 1934). Larvae have been found in fresh, polluted and brackish water, in temporary and permanent ground pools, natural and artificial containers and slow moving streams (Belkin, 1968; Dumbleton, 1968; Holder *et al.*, 1999). If utilising natural containers, wood is preferred, possibly due to its superior ability to retain heat (Miller and Phillipps, 1952). Rarely larvae are found in rock pools (Dumbleton, 1965).

In a domestic situation larvae will breed in troughs, vases, tanks, cisterns, gutters, jars, tins, bottles, tyres, buckets and many other vessels left lying around (Baber, 1934). Because of their ability to utilise a wide variety of breeding habitats *Cx. pervigilans* can thrive in both rural and urban environments (Derraik *et al.*, 2005).

Adult and larval activity levels are at their peak in the spring to late summer months (Miller and Phillipps, 1952) though larvae may be found developing in winter in warmer areas such as Auckland (Graham, 1929), or during warm spells of weather (Miller and Phillipps, 1952). Larvae may otherwise survive over winter with no development taking place (Miller and Phillipps, 1952).

As a species of *Culex*, eggs are not desiccation resistant and are laid as rafts on the surface of the water (Miller and Phillipps, 1952). Females will land on debris floating on top of the water and back down to the waters edge (Graham, 1929). Over about 15 minutes, up to 300 eggs are laid at intervals of a few seconds (Graham, 1929).

Dispersal patterns are unknown but adults appear to preferentially fly in the canopy when in native forest but have been found flying at ground level in domestic areas, including within dwellings, possibly to utilise new blood meal opportunities such as mammals, rather than birds (Derraik, 2003; Derraik *et al.*, 2005).

An abundant domestic pest (Belkin, 1968), it has been noted to have a high pitched whine when flying and is a nocturnal biter (Graham, 1929; Belkin, 1968).

References

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