

## *Culex (Culex) sitiens* Wiedemann

saltmarsh *Culex*

**NZ Status: Not present – Unwanted Organism**



### **Vector and Pest Status**

*Culex sitiens* should be considered a potential vector of Japanese Encephalitis. The virus has been obtained from *Cx. sitiens* collected from Malaysia and Taiwan (Van Den Hurk et al. 2003). Laboratory studies have shown that this mosquito can transmit Ross River virus, but the infection rate is generally low (e.g. Russell 1996, Ritchie et al. 1997) these findings suggests that this species may only play a limited role in the natural transmission of Ross River virus (Fanning et al. 1992, Ehlers & Alsemgeest 2011). *Cx. sitiens* is a secondary vector of filariasis (*Brugia malayi*) (Ragaau 1962, Ehlers & Alsemgeest 2011).

Is important to signal that the main vectors of human Ross River virus infection in Australia are *Aedes vigilax*, *Aedes camptorhynchus*, and *Culex annulirostri*, and the major vector of Japanese Encephalitis in Australia is *Cx. annulirostris*, a member of the *sitiens* grup (Harley et al. 2001).

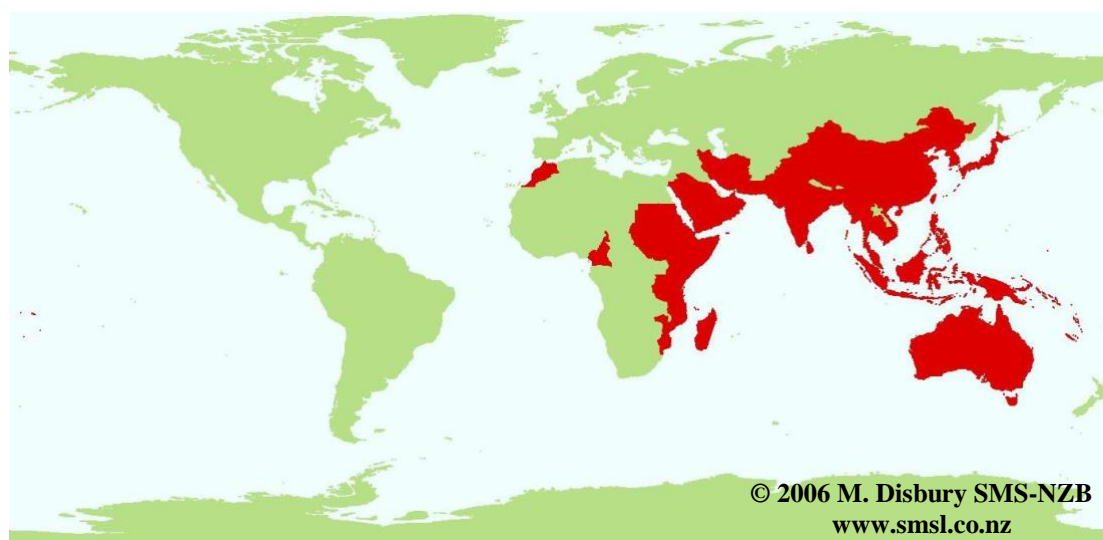
## Geographic Distribution

*Culex sitiens* is widespread throughout coastal areas of Southeast Asia and other adjacent tropical areas in the Oriental region, with extensions north and northeast as far as southern China and the Ryukyus Islands

widespread in the tropical parts of the Oriental, Australasian (including: South Pacific, Micronesia) and in the eastern parts of the Ethiopian region; (Sirivanakarn, 1976). It is also present within the Ethiopian region, the Middle East (Arabia and Iran), Micronesia, South Pacific, New Guinea and northern Australia (Sirivanakarn, 1976). In the South Pacific, it is found on the Solomon Islands, Nauru, Vanuatu (New Hebrides), New Caledonia, Tuvalu (Ellice Islands), Fiji, Wallis and Futuna Islands, Samoa, Tonga and Niue (Sirivanakarn, 1976).

Common on sea-coast, and probably occurring all round Indian coast'-line. Not usually found far in land. The range extends from East Africa, throughout the whole of the Oriental Region, to Australia and Fiji.

*Culex sitiens* is a common coastal species in Australia (Lee et al. 1989), and has been recorded feeding on pigs in Southeast Asia (Vythilingam et al. 1994).



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

The potential distribution of *Cx. sitiens* in New Zealand is throughout the North Island and as far south as Christchurch.

## Incursions and Interceptions

*Culex sitiens* has been intercepted on four occasions in New Zealand. Two of these occurred in Auckland on aircraft, the first from New Caledonia in 1943-1944, and second from Fiji/Norfolk Islands in 1950 (Derraik, 2004). This species was also intercepted on an aircraft from Australia during 1979-1982 (Derraik, 2004). Most recently, 4<sup>th</sup> instar larvae were intercepted at the Ports of Auckland on the 9<sup>th</sup> March 2003. The larvae were found inside two loose tyres on the back of a truck (rock crushing equipment) which was unloaded from a ship in Auckland. The equipment was loaded on to a ship in American Samoa.

## Taxonomy

*Culex sitiens* belongs to the subgenus *Culex*. Adults are similar and may sometimes be confused with *Cx. annulirostris* (Russell, 1993).

## Habits and Habitat

*Culex sitiens* is a coastal species which breeds in brackish water, showing a high tolerance for salty water (Sirivanakarn, 1976). This species is common in areas in the vicinity of beaches, harbours or piers in populated areas (Sirivanakarn, 1976). It commonly breeds in pools, puddles, ponds, wells, ditches, crab holes and rock pools in salt marsh, mangrove and nipa palm swamps, as well as canoes, boats, cement tanks, jars and cans (Sirivanakarn, 1976). It has also been found breeding occasionally in fresh water (Liehne, 1991; Russell, 1993).

The development cycle of *Culex sitiens* was recorded to take a total of 16 days at 24°C, with eggs hatching two days after being laid on the water surface (Lever, 1943).

Adult females are nocturnal biters and will readily feed on humans as well as other mammals and birds (Liehne, 1991). It has been recorded biting humans, chickens, horses, sheep, fowl, pigs, cattle (Sirivanakarn, 1976) and dogs (Travis, 1947; Bemrick and Moorhouse, 1968). They feed indoors and outdoors and rest outside during the day (Bonne-Wepster, 1954a; 1954b; Russell, 1993). This species has been found to travel up to 35 km from breeding areas (Liehne, 1991) and have been found 55km inland, south of Darwin (Hill, 1917).

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