NEW ZEALAND BIOSECURE
Entomology Laboratory

A DIVISION OF SMS SOUTHERN MONITORING SERVICES LIMITED

Aedes (*Stegomyia*) *polynesiensis* Marks

Polynesian mosquito

NZ Status: Not present –Unwanted Organisms

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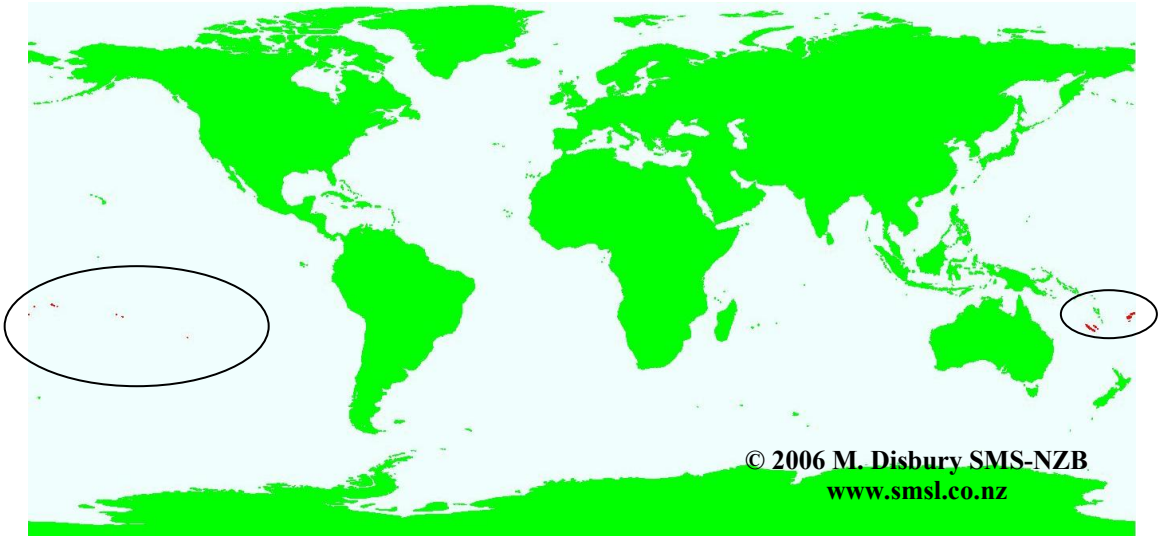
Vector and Pest Status

Aedes polynesiensis is a vector of dengue, dog heartworm (*Dirofilaria immitis*) and filariasis (*Wuchereria bancrofti*) (Rosen, 1954; Lee *et al*., 1987). This species is also susceptible to infection with *Brugia pahangi* and *Brugia malayii* (Trpis, 1981 in Lee *et al*., 1987). In the laboratory it has been shown to be capable of transmitting Murray Valley encephalitis (Rozeboom and McLean, 1956 in Lee *et al*., 1987) Ross River virus (Gubler, 1981) and Chikungunya (Richard, Paoaafaite and Cao-Lormeau, 2016a). The ability for *Ae. polynesiensis* to transmit Chikungunya is likely how the disease was able to spread rapidly though areas where *Ae. aegypti* is scarce or not present during an outbreak in French Polynesia in 2014-2015 (Richard, Paoaafaite and Cao-Lormeau, 2016a).

Aedes polynesiensis has also been found to be a vector for Zika virus, though they had a low transmission rate (Calvez *et al.*, 2018, Richard, Paoaafaite and Cao-Lormeau, 2016b) and while competence is poor they likely responsible for the spread of Zika virus where they are the predominate species (Richard, Paoaafaite and Cao-Lormeau, 2016b).

Geographic Distribution

Aedes polynesiensis is found only in the Pacific, in Fiji, Horne Islands, Ellice Islands (Tuvalu), Tokelau Islands, Samoa, Northern and Southern Cook Islands, Marquesas Islands, Society Islands, Mangarewa Islands, Alofi Island, Wallis and Futuna Island Austral Islands, Tuamotu Archipelago and Pitcairn Island (Lee *et al*., 1987).



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

Incursions and Interceptions

Aedes polynesiensis has been intercepted on three occasions in New Zealand since 2001. All interceptions involved larvae and pupae found at the Ports of Auckland. The first collection was on 28th of January 2004 from a concrete mixer truck originating from the Wallis and Futuna Islands. The second was on 11th October 2004 in used tyres believed to have been loaded on to the ship at Pago Pago (American Samoa). The third was on 14th December 2011 in used tyres on a truck from Samoa.

Taxonomy

Aedes polynesiensis belongs to the *Scutellaris* group of subgenus *Stegomyia*. This species is very similar to *Aedes albopictus* in behaviour and morphology.

Habits and Habitat

Aedes polynesiensis is a semi domestic container breeding species which has adapted to breed in natural containers such as tree holes, rock pools, coconut husks, the base of coconut and banana fronds, cocao pods, crab holes, as well as artificial containers such as drums, tin cans, canoes, tyres and roof gutters (Laird, 1956 in Lee *et al*., 1987; Bonnet and Chapman, 1956, 1958 in Lee *et al*., 1987).

Adult females can lay between 60-90 eggs per blood meal (Ingram, 1954). The eggs are laid singly on the sides of containers just above the waterline, preferring to lay them in cracks and niches compared to smooth surfaces (Jachowski and Otto, 1953). Drying of the eggs is fatal to the larvae within the eggs during the first three days after oviposition, during which time the eggs undergo embryonic development (Jachowski and Otto, 1953). Once development is complete the eggs remain viable and are resistant to desiccation (Ingram, 1954). The larval period under normal

conditions at 21-32°C and high relative humidity was generally 4-10 days and the pupal period from 2-4 days in a laboratory colony (Ingram, 1954).

Aedes polynesiensis appears to have a short flight range, travelling only 92m through the jungle in one experiment (Jachowski and Otto, 1953). This species is diurnally active with a small peak in activity in the early morning and a lesser one in the afternoon. Maximum biting has been recorded between 3pm and 6pm (Jachowski and Otto, 1953; Jachowski, 1954).
This species has been observed to bite indoors and outdoors (Suzuki and Sone, 1973). The preferred hosts are humans, however the adult females will also feed on pigs, horses, dogs, bats, sheep, goats and cats (Ramalingan, 1968 in Lee *et al*., 1987; Symes and Matika, 1959 in Lee *et al*., 1987; Symes, 1961 in Lee *et al*., 1987).

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