

# NEW ZEALAND BIOSECURE

**Entomology Laboratory** 

Aedes (Finlaya) togoi (Theobald)

NZ Status: Not Present - NSP Watchlist



## **Vector and Pest Status**

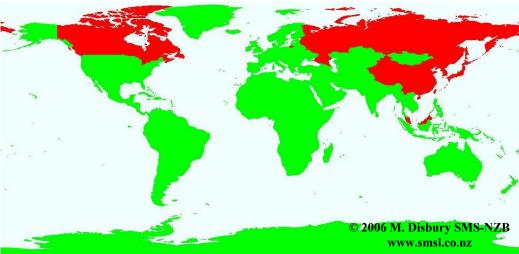
Aedes togoi is a vector of Malayan filariasis, and a possible vector of the following: Brugia phangi, Wuchereria bancrofti, Dirofilaria immitis and Japanese encephalitis (Ramachandran et al., 1963; Tanaka et al., 1979). It is also an experimental vector of Semliki Forest virus (Nye and Lien, 1960).

### **Geographic Distribution**

This species is found in China, Japan, Marcus Islands, Korea, Malaysia, Taiwan, Thailand (Koh Samui Islands), Siberia (Russia) (Ramalingan, 1969; Gould *et al.*, 1968; Thomas and Leng, 1972) and Canada (Belton and Belton, 1990).

#### **Incursions and Interceptions**

Larvae of *Ae. togoi* were intercepted in a sewerage truck at Ports of Auckland in January 2007. This species has been collected from used tyres imported into the United States from Asia (Craven *et al.*, 1988).



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

### **Taxonomy**

Aedes togoi belongs to the Finlaya subgenera.

#### **Habits and Habitats**

Larvae are common in coastal regions, usually occurring in tidal pools or rock pools of saline or brackish water above the tidal zone, but also occasionally in containers such as used tyres with fresh water (Shestakov, 1961; Tanaka *et al.*, 1979; Craven *et al.*, 1988). Larvae of *Ae. togoi* have been found in ships' bilges in Japan (Hsaio and Bohart, 1946).

Aedes togoi is thought to lay between 30-80 eggs (Shestakov, 1961). This species overwinters in the egg stage, however during a warm winter, they may also overwinter as larvae (Shestakov, 1961). Some strains of Ae. togoi are autogenous (Thomas and Leng, 1972; Riyong et al., 2000).

In Russia, larval development in June, at an average water temperature of 20.7°C lasts 17 days, with a pupal development time of 3 days (Shestakov, 1961).

Females of *Ae. togoi* have been reported to readily bite humans throughout the day (Shestakov, 1961; Tanaka *et al.*, 1979) and to remain indoors during daytime (Shestakov, 1961). However, Lee and Hong (1995) report that feeding activity of *Ae. togoi* is nocturnal, with the a peak period of biting between 1-3am.

In North America, females bite humans on beaches near larval habitats from at least June till October (Belton and Belton, 1990). Omori and Fujii (1953) noted that this species will bite humans but appear to prefer biting cattle.

In a dispersal study of *Ae. togoi* adults in Japan, it was found that females could fly at least 1km from coastal rock pools (Wada *et al.*, 1975). This species has been recorded nuisance biting on board a sailing boat anchored offshore (Belton and Belton, 1990).

#### References

- Belton, P. and Belton, O.C. 1990. *Aedes togoi* comes aboard. *Journal of the American Mosquito Control Association* 6(2): 328-329.
- Craven, R.B., Eliason, D.A., Francy, D.B., Reiter, P., Campos, E.G., Jakob, W.L., Smith, G.C., Bozzi, C.J., Moore C.G., Maupin, G.O. and Monath, T.P. 1988. Importation of *Aedes albopictus* and other exotic mosquito species in the United States in used tires from Asia. *Journal of the American Mosquito Control Association* 4(2): 138-142.
- Gould, D.J., Yuill, T.M., Moussa, M.A., Simasathien, P. and Rutledge, L.C. 1968. An insular outbreak of dengue haemorrhagic fever III. Identification of vectors and observation on vector ecology. *American Journal of Tropical Medicine and Hygiene* 17: 609-618.
- Hsaio, T. and Bohart, R.M. 1946. The mosquitoes of Japan and their medical importance. U.S. Dept. Navy; *Navmed* 1095: 1-44.
- Lee, J.S. and Hong, H.K. 1995. Seasonal prevalence and behaviour of *Aedes togoi*. *Korean Journal of Parasitology* 33(1): 19-26.
- Nye, E.R. and Lien, J.C. 1960. Laboratory transmission of Semliki Forest virus by *Aedes togoi* Theo. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 54: 263-4.
- Omori, N. and Fujii, S. 1953. On the feeding habits of *Aedes togoi* and some other species of mosquitoes. *Yokohama Medical Bulletin* 4(1): 23-31.
- Ramachandran, C.P., Wharton, R.H., Dunn, F.L., and Kershaw, W.E. 1963. *Aedes* (*Finlaya*) *togoi* Theobald, a useful laboratory vector in studies of filariasis. *Annals of Tropical Medicine and Parasitology* 57: 443-445
- Ramalingan, S. 1969. New record of *Aedes (Finlaya) togoi* (Theobald) in West Malaysia. *Medical Journal of Malaysia* 23: 288-292.
- Riyong, D., Choochote, W., Jitpakdi, A., Suvannadabba, S., Leemingsawat, S. and Chaithong, U. 2000. Autogenous *Aedes togoi* sub-colony (Chanthaburi, Thailand strain), and efficient laboratory vector in study of filariasis. *Southeast Asian Journal of Tropical Medicine and Public Health* 31(2): 246-251.
- Shestakov, V.I. 1961. Contribution to the biology of the mosquito *Aedes togoi* Theob. *Zoologicheskii Zhurnal* 40(2): 284-285). Translation from Russian: Translation 1226 (T1226) Medical Zoology Department, United States Naval Medical Research Unit, Number Three, Cairo, Egypt.
- Tanaka, K., Mizusawa, K. and Saugstad, E.S. 1979. A revision of the adult and larval mosquitoes of Japan (including the Ryukyu Archipelago and the Ogasawara islands) and Korea (Diptera: Culicidae). *Contributions to the American Entomological Institute* (Ann Arbor) 16:1-987.
- Thomas, V. and Leng, Y.P. 1972. The inheritance of autogeny in *Aedes (Finlaya)* togoi (Theobald) from Malaysia and some aspects of its biology. Southeast Asian *Journal of Tropical Medicine and Public Health* 3(2): 163-174.
- Wada, Y., Suenaga, O. and Miyagi, I. 1975. Dispersal experiment of *Aedes togoi*. *Tropical Medicine* 16(3): 137-146.