

Presence of *Culex asteliae* larvae and *Ochlerotatus notoscriptus* adults (Diptera: Culicidae) in a native tree canopy in the Auckland region

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Although New Zealand has a species-poor mosquito (Diptera: Culicidae) fauna with only 12 endemic and four exotic species (Derraik 2004), little information is available on their bionomics, particularly for indigenous species. One poorly known species is the endemic *Culex (Culex) asteliae* Belkin. Adults of this species have recently been collected in nature for the first time, and all specimens were recorded in canopy traps at 10 m (Derraik *et al.* 2005). This species is not believed to occur south of Auckland, and its main larval habitat seems to be the leaf axils of the native epiphyte *Collopermum hastatum* (Liliaceae) (Belkin 1968).

An extensive investigation into the mosquito fauna of native forests in the Auckland region has indicated that *Cx. asteliae* only breeds in phytotelm habitats, and that the leaf axils of *C. hastatum* are indeed the species' main larval habitat (Derraik, unpublished data). Nonetheless, larvae of this species were also collected from the leaf axils of exotic bromeliads and fallen leaves of the endemic nikau palm (*Rhopalostylis sapida*; Palmae) in the Auckland survey.

Unlike the adults which appear to host-seek mostly within the tree canopy (Derraik *et al.* 2005), larvae of *Cx. asteliae* were found to be abundant in the leaf axils of a large number of *C. hastatum* plants surveyed between ground level and ca.3 m throughout the Auckland region (Derraik, unpublished data). I therefore set out to investigate whether *Cx. asteliae* would also oviposit high in the tree canopy, where its adults appear to be most active.

Larvae of *Cx. asteliae* were abundant in numerous *C. hastatum* sampled below 2 m at the Wenderholm Regional Park (36° 32' 30" S, 174° 42' 35" E) (Derraik, unpublished data). A large native puriri tree (*Vitex lucens*, Verbenaceae) present within the native forest at this site was selected for this study because it had a branching pattern that facilitated climbing and numerous *C. hastatum* specimens

were present on branches high above the ground. An endoscopic tube 5 mm wide and 55 cm long, attached to a 50 ml syringe was used to sample the leaf axils. Sampling was carried out in dry and windless conditions on the 11th April, 2003.

I climbed to the highest possible point to which it was safe to do so, and was able to sample five large and healthy *C. hastatum*, of which two were at ca. 14 m and three were at ca. 18 m above ground. Individual plants were found to harbour between 22 and 31 *Cx. asteliae* larvae (mean = 26.8 larvae per plant; SD = 4.4). These data indicated that *Cx. asteliae* females indeed oviposit in the leaf axils of this native epiphyte over a large vertical stratum in native forests, between ground level and at least 18 m.

It is also noteworthy that the exotic *Ochlerotatus (Finlaya) notoscriptus* (Skuse) was numerous in ovitraps at the site (Derraik & Slaney 2005) and was aggressively biting the author during this daytime sampling. Biting was particularly vicious at ground level, but numerous specimens were collected while actively feeding on the author throughout the slow vertical ascent. *Ochlerotatus notoscriptus* females were recorded actively feeding up to 18 m into the tree canopy. These observations support data obtained in the Waitakere Ranges and Wellington, where adults were also collected in traps placed both at ground level and at 10 m into the canopy (Derraik *et al.* 2003, 2005). This exotic species is clearly able to feed on hosts over a wide vertical range within native forests.

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