

Notes on some adult mosquito (Diptera: Culicidae) records from West Auckland

José G. B. Derraik

Ecology and Health Research Centre, Department of Public Health, Wellington School of Medicine and Health Sciences, University of Otago, P.O. Box 7343, Wellington, New Zealand (jderraik@ihug.co.nz)

Habitat modification may lead to the displacement of certain mosquito species, although it may actually benefit other species (Service 1991). Such changes seem to favour exotic species, but it is possible that some native mosquitoes, such as *Culex (Culex) pervigilans* Bergroth may actually thrive in human-modified environments. The risk of a mosquito-borne disease outbreak means that it is important to better understand the bionomics of mosquitoes inhabiting anthropogenically modified environments, where contact between exotic mosquito vectors and human hosts is likely to be highest.

An extensive study into the Culicidae fauna of New Zealand was carried out in the Auckland region, during which a considerable number of specimens were collected on an *ad hoc* basis, when conditions were suitable. Larval records were numerous (Derraik, unpublished manuscript), but there were also some adult collections in West Auckland in Summer 2003, which are discussed here. Most adult specimens were collected by colleagues (see Acknowledgements), but two dry ice-baited light traps were also set overnight during January and February 2003. Identification of specimens was carried out using a key to the Culicidae of New Zealand (Snell, in press).

The first adult trap was set in a backyard in the suburb of Kelston and yielded 127 specimens, all of which were exotic species: 122 *Ochlerotatus (Finlaya) notoscriptus* (Skuse) and five *Culex (Culex) quinquefasciatus* Say (Table 1). Another adult trap was set at Landsend, within a narrow strip of native trees (2-3 trees thick) above a small creek adjacent to the main dwelling of an exotic plant nursery. On this property, a very large number of bromeliads were present and were found to harbour countless mosquito larvae (Derraik, unpublished manuscript). The overnight trap yielded 1029 mosquitoes, 1020 of which were the exotic *Oc. notoscriptus*, with nine specimens being the endemic *Ochlerotatus (Ochlerotatus) antipodeus* (Edwards).

Table 1. Records of adult mosquitoes from West Auckland.

Collection Method	Date	Locality	Species	Site Description
Adult Trap	31.01.03	Oratia, West Auckland 36° 56' 30" S 174° 36' 30" E	9 <i>Oc. antipodeus</i> 1020 <i>Oc. notoscriptus</i>	Clump of native trees above small creek adjacent to house (overnight)
	10.02.03	Kelston, West Auckland 36° 53' 40" S 174° 38' 35" E	5 <i>Cx. quinquefasciatus</i> 122 <i>Oc. notoscriptus</i>	Backyard of house, shade of rimu tree (overnight)
Indoor Collection	18.01.03	Huia, West Auckland 37° 01' 10" S 174° 33' 20" E	32 <i>Cq. iracunda</i> 1 <i>Cq. tenuipalpis</i> 1 <i>Oc. antipodeus</i>	Fly spray catch in bathroom (night-time)
	30.01.03	Wairere Rd, West Auckland 36° 51' 26" S 174° 33' 20" E	3 <i>Cq. iracunda</i>	Daytime body collection inside house
	15.03.03	Kelston, West Auckland 36° 53' 40" S 174° 38' 35" E	1 <i>Cx. pervigilans</i>	Inside house (night-time)

The owners of the Wairere Nursery, after complaining of unusual mosquito nuisance in the daytime, forwarded three *Coquillettidia (Coquillettidia) iracunda* (Walker) specimens collected during bite attempts. One person in Huia used a can of fly spray to kill at least 34 mosquitoes in their bathroom at night-time. All specimens were native species, mainly *Cq. iracunda* (32 specimens), but one *Coquillettidia (Austromansonia) tenuipalpis* (Edwards) and one *Oc. antipodeus* were also recorded. Note that Landsend, Wairere Nursery and the house at Huia were located in the Waitakere Ranges. A final adult *Cx. pervigilans* specimen was collected indoors from a house in Kelston.

Huia is surrounded by extensive areas of native forest in the Waitakere Ranges, and

it seems that *Cq. iracunda* will readily leave the forest canopy and fly into open modified habitats in search of hosts. According to Belkin (1968) the species is known to fly considerable distance from its breeding sites and into buildings. Although the 32 *Cq. iracunda* specimens collected at Huia appeared to be more attracted to the light left on in the bathroom than to sleeping human hosts, the species does bite humans indoors as shown by the collection at the Wairere Nursery.

The record of a *Cq. tenuipalpis* specimen indoors at Huia is also significant. The hosts of this native species are unknown (Holder *et al.* 1999), but Belkin (1968) stated that it “apparently seldom bites man” (p.78), which suggests that there have been previous incidents of *Cq. tenuipalpis* biting humans. In relation to *Oc. antipodeus*, the nine adult specimens caught at Landsend most likely originated from native forest fragments in the nearby Waitakere Ranges, as the species is known to breed in shady habitats within native bush (Belkin 1968). This collection and the specimen caught indoors at Huia suggest that the species may also fly out of the forest and into the open following host cues. The fly spray catch from Huia may indicate that *Oc. antipodeus* is attracted to humans, but Belkin (1968) mentioned that although it has been recorded inside buildings, there has been no records of *Oc. antipodeus* actually biting humans indoors.

The exotic *Oc. notoscriptus* appears to have become the most abundant and widespread container breeding mosquito in modified habitats in the Auckland region (Derraik 2004a, c, unpublished manuscript). The 1020 *Oc. notoscriptus* specimens recorded overnight in one adult trap at Landsend demonstrated that the species can achieve very high densities in modified environments, which native mosquitoes seem less capable of exploiting. In addition, the observed density of *Oc. notoscriptus* and this species’ status as a potential disease vector in New Zealand (Derraik 2004b) means that public health authorities should consider putting mosquito control programmes in practice, at least in the Auckland region.

Although anecdotal, the evidence provided by these collections seems to confirm that *Cq. iracunda* is the most anthropophilic species among New Zealand’s native mosquitoes. Other studies have acknowledged that *Cq. iracunda* is readily attracted to man (Graham 1939, Holder *et al.* 1999, Derraik & Snell 2004), and laboratory experiments should be carried out to assess its vector status, especially since it appears to move into human dwellings in relatively high numbers.

Acknowledgements

I would like to thank the people who provided access to their properties and/or collected specimens for me: Richard Davey, Jody Lusk & Jonathan Davey Lusk (Wairere Nursery), Dick & Annemarie Endt (Landsend), and Joy Reilly. Special thanks to Amy Snell for valuable assistance with identification of adult specimens,

and to Phil Sirvid and Raphael Didham for revising this manuscript. The University of Otago provided funding support.

References

- Belkin JN. 1968. Mosquito Studies (Diptera: Culicidae) VII. The Culicidae of New Zealand. *Contributions of the American Entomological Institute* 3: 1-182.
- Derraik JGB. 2004a. A survey of the mosquito (Diptera: Culicidae) fauna of the Auckland Zoological Park. *New Zealand Entomologist* 27: 51-55.
- Derraik JGB. 2004b. Exotic mosquitoes in New Zealand: a review of species intercepted, their pathways and ports of entry. *Australian and New Zealand Journal of Public Health* 28: 433-444.
- Derraik JGB. 2004c. Mosquitoes (Diptera: Culicidae) breeding in artificial habitats at the Wellington Zoo. *The Weta* 28: 28-31.
- Derraik JGB, Snell AE. 2004. Notes on daytime biting catches of mosquitoes (Diptera: Culicidae) in native forest sites in the Auckland region. *The Weta* 28: 14-19.
- Graham DH. 1939. Mosquito life in the Auckland District. *Transactions and Proceedings of the Royal Society of New Zealand* 69: 210-224.
- Holder P, Browne G, Bullians M. 1999. The mosquitoes of New Zealand and their animal disease significance. *Surveillance* 26: 12-15.
- Service MW. 1991. Agricultural development and arthropod-borne diseases: a review. *Revista de Saúde Pública* 25: 165-178.
- Snell AE. in press. Identification keys to larval and adult female mosquitoes (Diptera: Culicidae) of New Zealand. *New Zealand Journal of Zoology*.