

Black flies, sandflies, te namu

Known in New Zealand as 'sandflies' or 'te namu' and elsewhere in the world mainly as 'black flies', Simuliidae are iconic New Zealand insects. Virtually every New Zealander has been bitten by female simuliids, as have many overseas tourists. Worldwide, simuliids are notorious for their disease transmission, in particular river blindness in Africa and South America. New Zealand simuliids are not known to transmit any diseases to humans, but many people react badly to bites of species to which they have no previous exposure.

Simuliids of New Zealand belong to the genus *Austrosimulium* known only from New Zealand, Tasmania, and mainland Australia. Simuliid larvae require running water and in New Zealand are more or less ubiquitous, occurring in almost all running water habitats. There are 19 species of *Austrosimulium* in New Zealand, but only three species found here are serious biters of humans and it is only the females that bite; they bite to get the nutrients to produce eggs. In this *Fauna* keys are provided for larvae, pupae, adults, and ecological habitats. All known stages are described and illustrated for each species, together with information on their bionomics and biogeography. There are 72 full page colour plates and a total of 540 figures. Molecular analysis indicated that New Zealand *Austrosimulium* arrived by dispersal about 5 million years ago.

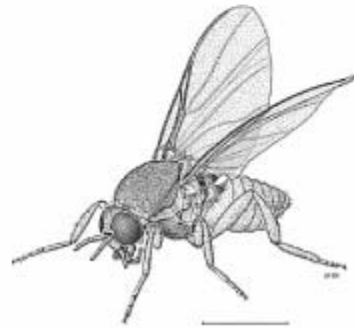
Elsewhere in the world simuliids in the genus *Austrosimulium* may be considered to feed on birds or mammals, depending on the presence or absence of a tooth on the tarsal claw. New Zealand simuliids are opportunistic and females will generally take blood meals from whatever is available, though there is one species that attacks Fiordland crested penguins while studiously avoiding humans.

What did New Zealand simuliids feed on before humans arrived? Of little doubt it would be on the vast number of birds, now greatly depleted, and probably also the large numbers of seals present then. Indeed, searching along beaches for a blood meal from either birds or seals still appears inherent behaviour of New Zealand adult female simuliids — and probably the reason for their name 'sandflies'.

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68 Simuliidae

(Insecta: Diptera)



Female adult *Austrosimulium australense*
(Schiner)

Illustration: Des Helmore

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