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A revision of the New Zealand species of *Howickia* Richards

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Abstract

Howickia Richards 1951 is redefined to include all wingless or strongly brachypterous Sphaeroceridae in New Zealand as well as two newly described fully winged species, *H. oliveri* and *H. lepidostylus*. *Biroina* Richards 1973 is newly treated as a junior subjective synonym of *Howickia*. The following new flightless species are described from New Zealand: *H. bicolor*, *H. cordata*, *H. exasperata*, *H. harrisoni*, *H. mercurialis*, *H. nigrilegula*, *H. nigriventer*, *H. nudistylus*, *H. omamari*, *H. palmai*, *H. regalis*, *H. tangata*, *H. wahaika* and *H. zonula*.

Key words: Sphaeroceridae, Limosininae, *Howickia*, *Biroina*, *Apterobiroina*, wing loss, New Zealand, flightless Diptera

Introduction

Richards (1973), in his review of the Sphaeroceridae of the Australian region, recognized two species of flightless Sphaeroceridae from New Zealand and placed them in two different genera, the New Zealand endemic genus *Howickia* Richards 1951 and the primarily Australian genus *Biroina* Richards 1973. His key diagnosed *Howickia*, including only *H. trilineata* (Hutton), as follows: "Halteres rudimentary; no superior orbital bristles; ocelli absent; prosternum linear with a small posterior triangular expansion; head with 3 lines of silvery pubescence". *Biroina* was diagnosed mostly on wing characters, but Richards (1973) included one flightless species from each of New Zealand and Australia in *Biroina* on the basis of "general appearance" and because, unlike *Howickia*, they had ocelli, halteres, and superior orbital bristles. Papp (1979) described a similar wingless species from Australia, putting it in a new monobasic genus *Apterobiroina* with the comment that it was probably a "derivative of the hypothetical common ancestor of *Biroina* Richards and *Apterobiroina* gen. n.". He later (Papp, 1995) remarked that "*Apterobiroina* is not related to the genus *Biroina* as originally stated by Papp (1979) but possibly to *Minilimosina* Roháček 1983".

All wingless or effectively wingless New Zealand Sphaeroceridae, along with two newly described fully winged species, are here shown to be congeneric with the Australian type species of *Biroina*. *Biroina* is thus confirmed as a junior synonym of *Howickia* (as previously suggested in Marshall *et al.* 2011), and wing loss must have occurred repeatedly in the now broadly defined genus *Howickia*. The diverse Australian *Howickia* fauna, including several undescribed wingless and winged species, and probably including *Apterobiroina*, will be treated in a later paper. All species currently treated as *Biroina* probably belong in *Howickia* as defined here.

Material and methods

This study began with a 1999 visit to New Zealand during which six wingless sphaerocerid species were collected, four more than were known from the country at that time. Further wingless sphaerocerid specimens were later borrowed from the New Zealand Arthropod Collection, Auckland (NZAC) and from the Entomological Collection, Museum of New Zealand, Wellington (NMNZ). Others were provided by Hugh Oliver (Hamilton, New Zealand)

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