

## The Australian Museum Lord Howe Island Expedition 2017—Drosophilidae (Diptera)

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**ABSTRACT.** Twelve species of Drosophilidae (Diptera) have now been reported from Lord Howe Island in the Tasman Sea 600 km east of the Australian mainland. There are two endemic species: *Scaptodrosophila howensis* and an undescribed species of *Leucophenga*. Six species are peridomestic worldwide or widespread in the Australian Region. During the Australian Museum expeditions to the island in 2000–2002, 2009 and 2017, the number of species in the known fauna has doubled. The level of endemism is less than the more isolated and larger Norfolk Island, which has 4 endemics (6 spp in total), New Caledonia has 35 endemics (52 in total). The number of Lord Howe Island species is a small fraction of the total fauna of Australia (278 spp), about 140 species occur at the same latitude ( $\pm 2^\circ$ ) on the Australia mainland. The first high resolution micrographs of *Mycodrosophila stigma*, *M. rosemaryae*, *Scaptodrosophila howensis*, *S. fungi*, *Dettopsomyia nigrovittata*, *Drosophila serrata* and *Drosophila busckii* are published here for the first time.

**KEYWORDS.** Diptera, Drosophilidae, Lord Howe Island, *Mycodrosophila*, *Leucophenga*, *Scaptodrosophila*

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New Guinea and the tropical north of Australia have been a single land mass for most of the last 200 thousand years (Williams, 2001), 37 genera of Drosophilidae are known from this region making it the most bio-diverse place in the world for this fly family. This can be compared to the entire Neotropical Region which has 34 drosophilid genera, the Afrotropical Region with 29 genera, and the Palaearctic with 28. Species richness attenuates southwards in a narrow corridor of suitable humid rainforest or wet sclerophyll forest habitats along the eastern seaboard of Australia (McEvey, 1994). Attenuation in species richness also occurs in an easterly direction across islands and archipelagos of the South Pacific, but insular endemism occurs on larger subequatorial islands like New Caledonia, Fiji, Samoa, and the Marquesas and Society Islands (McEvey & Polak,

2005; McEvey & Schiffer, 2015). New Zealand has a depauperate drosophilid fauna (16 spp, 4 genera) possibly due to its isolation and distance from New Guinea and its cooler climate.

Entomological surveys of the two small islands between New Zealand and Australia: Norfolk Island ( $-29^\circ 167^\circ$ ) and Lord Howe Island ( $-31^\circ 159^\circ$ ) have been conducted during the last 50 years. Norfolk Island is less well surveyed, has six species, 4 of which are endemic, and one of which represents a genetically isolated variant—*Drosophila ananassae* dark form—typical of islands to the north (McEvey & Schiffer, 2015). The Australian Museum expeditions to Lord Howe Island in 1971, 1974, 2000–2002, 2009 and 2017 (Table 1) have each produced interesting results summarized in the present report. An early study (Parsons & Bock, 1980)