

Drosophilidae (Diptera) of the Cook Islands

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ABSTRACT. In 2017 a survey was conducted of the Drosophilidae on the remote Cook Islands: Rarotonga, Aitutaki and Mangaia in the Tropical South Pacific. A diverse range of collecting methods was implemented, at different elevations and in domestic, rural, and montane-forest habitats. Only two widespread species *Drosophila ananassae* and *D. simulans* have previously been reported from Cook Islands. Among the 8036 specimens collected, 12 species were found, one of which—*Drosophila rarotongae* sp. nov.—is described here as new; it is endemic to Rarotonga and found only in montane forest. *Drosophila suzukii* was absent. An unusual species close to *Drosophila funebris* was collected (one female); various measures revealed its morphological difference from Afrotropical and Palearctic *D. funebris* specimens. Possible synonymies between *Scaptodrosophila bryani* and *S. anuda*, and between *S. concolor* and *S. marjoryae* were discovered and are discussed. *Drosophila pallidifrons* was found among *D. sulfurigaster* in very low frequency (1%).

Introduction

The Cook Islands are a group of very isolated atolls and higher volcanic islands in the South Pacific Ocean between French Polynesia and Samoa. They are part of the Cook-Austral island chain within the larger biogeographic categorization: the islands of the Tropical South Pacific (TSP). Islands in the TSP are known to be centres of speciation (Sear *et al.*, 2020), home to colonists, or refugia for relictual taxa (Keppel *et al.*, 2009).

Species of the family Drosophilidae have been the focus of a number of studies in the TSP (Malloch 1932, 1934a,b; Curran, 1934; Harrison, 1954; Wheeler & Takada, 1964; Wheeler & Kambysellis, 1966; McEvey & Polak, 2005) but the species composition of the Cook Islands was, before the present study, very poorly known. Islands of the TSP are known to be home to a variety of insular endemic drosophilid species (McEvey & Polak, 2005; McEvey & Schiffer, 2015; Schug *et al.*, 2007), some so different that

they have warranted erection of new genera or subgenera—*Dicladochaeta* Malloch, 1934, *Idiomyia* Grimshaw, 1901, *Marquesia* Malloch, 1932, *Rosenwaldia* Malloch, 1934, and *Samoaia* Malloch, 1934 (Malloch, 1932, 1934a,b).

Further to the west, and outside the TSP (sensu Keppel *et al.*, 2009: fig. 1), the Drosophilidae have been studied over a long period of time. Southeast Asia, New Guinea, Australia and New Caledonia are known to have several thousand species in more than 40 genera (Brake & Bächli, 2008). New Zealand, by contrast, has a relatively small number of species in three genera—16 species are described, 2 since 1981 (Bock & Parsons, 1981). Other TSP islands like Tahiti, Samoa and Fiji—lands of varying sizes, altitudes and remoteness (Fig. 1, Table 1)—are known to have a mixture of locally endemic species and genera, often restricted to montane forests together with more widespread human-commensal species abundant in and around villages at sea-level. There are many insular endemics with very restricted distributions, for example, of the seven *Mycodrosophila*

Keywords: Cook Islands; Drosophilidae; Diptera; new species; biogeography; taxonomy

ZooBank registration: urn:lsid:zoobank.org:pub:5F204B3F-03AD-459D-83F3-4D14B41A1677

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Received: 11 June 2021 **Accepted:** 5 July 2021 **Published:** 24 November 2021 (in print and online simultaneously)

Publisher: The Australian Museum, Sydney, Australia (a statutory authority of, and principally funded by, the NSW State Government)

Citation: McEvey, Shane F., and Michal Polak. 2021. Drosophilidae (Diptera) of the Cook Islands. *Records of the Australian Museum* 73(5): 153–170. <https://doi.org/10.3853/j.2201-4349.73.2021.1770>

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