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 Palaearctic 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 & Kambyssellis, 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—islands 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...