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## Endemics and adventives: Thysanoptera (Insecta) biodiversity of Norfolk, a tiny Pacific Island

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### Abstract

The thrips fauna of Norfolk Island is a curious mix of endemics and adventives, with notable absences that include one major trophic group. A brief introduction is provided to the history of human settlement and its ecological impact on this tiny land mass in the western Pacific Ocean. The Thysanoptera fauna comprises about 20% endemic and almost 50% widespread invasive species, and shows limited faunal relationships to the nearest territories, Australia, New Caledonia and New Zealand. This fauna, comprising 66 species, includes among named species 29 Terebrantia and 33 Tubulifera, with four Tubulifera remaining undescribed. At least 12 species are endemics, of which 10 are mycophagous, and up to 10 further species are possibly native to the island. As with the thrips fauna of most Pacific islands, many species are widespread invasives. However, most of the common thrips of eastern Australia have not been found on Norfolk Island, and the complete absence of leaf-feeding Phlaeothripinae is notable. The following new taxa are described: in the Phlaeothripidae, *Buffettithrips rauti* **gen. et sp. n.** and *Priesneria akestra* **sp. n.**; and in the Thripidae, *Scirtothrips araucariae* **sp. n.** and *Thrips merae* **sp. n.**

**Key words:** Norfolk Island, thrips endemism, invasion, faunal relationships, new species

### Introduction

Norfolk Island is a small, isolated, sub-circular, volcanic landmass, less than 10 km in diameter and with an area of approximately 35 km<sup>2</sup> (Fig. 1). It lies about 1450 km east of Brisbane, Australia, and 900 km northeast of Lord Howe Island, and is almost 700 km from both the North Cape of New Zealand to the south and New Caledonia to the north. The climate is sub-tropical, with an annual temperature range from 13°C to 25°C and a mean annual rainfall of a little over 1300 mm. Archaeological evidence suggests that Polynesians were present on the island for a period between 800 and 600 years before the first Europeans visited in 1774. Captain James Cook, with a few of his crew, landed briefly on a northwest rocky beach, but sailed on to New Zealand the same day after noting the numerous tall pine trees and thickets of flax plants (Coyne 2011). The next European visitors arrived late in 1787, on two French vessels commanded by La Pérouse, but they were unable to land, and reported wryly that, such were the sea cliffs and rough seas, the island was fit only for eagles and angels.

In January 1788, within two weeks of the first European colonists of Australia arriving from Britain at Botany Bay, one of the ships of the First Fleet was sent to Norfolk Island with a party of convicts to found a colony. The instructions were to cultivate the flax plants, and presumably to ensure that the French did not attempt to found a settlement. From the subsequent viewpoint of conservation biology, it is important to note that this ship carried with it live material of *Citrus jambhiri* that had been acquired by the First Fleet at Rio de Janeiro on the journey from England (Coyne 2011), and probably also specimens of the Brazilian Red Guava, *Psidium cattleianum*. Subsequently, these two species became highly invasive on the island and, together with several other introduced plants, greatly modified the environment. This modification was facilitated during the penal colony period by extensive deforestation. That colony was finally abandoned in 1855, and the following year the island was occupied by the Pitcairn Islanders who were descendants of the mutineers of the *Bounty*.

During the 1920s extensive areas on the steep slopes of Norfolk Island were further deforested in order to plant bananas, in response to the failure of this crop in eastern Australia at that time. When production in Australia