

The Australian Museum and Friends of Lord Howe Island survey of large Coleoptera on Lord Howe Island, August 2022

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ABSTRACT. A survey of large beetles, one centimetre or more in length, on Lord Howe Island, was conducted in August 2022 and the results are discussed. In total, 32 large species were found. This was the first survey made at least one beetle generation after eradication of the rodents in 2019, and there was some evidence of recovery, in particular of the large flightless endemic cerambycid, *Xylotoles wollastoni* (White, 1856), but also of a leaf beetle, *Dematochroma picea* (Baly, 1864) and an exotic pest of lawns, *Heteronychus arator* (Fabricius, 1775). There was also evidence of recovery of Carabidae species after the prolonged dry years of 2016 to 2019.

Introduction

The Lord Howe Archipelago is listed as a World Heritage Site (Anonymous, 2018) and has a highly diverse and endemic flora and fauna. The archipelago consists of Lord Howe Island (14,000 ha) and Blackburn Island (2.4 ha), plus several other small islands not included in this survey. The fauna includes at least 535 species of Coleoptera, most of which are endemic to the archipelago (Cassis *et al.*, 2003; Reid *et al.*, 2020). Most of these beetle species are small, less than 6 mm in length, and have therefore been poorly sampled and poorly studied taxonomically in historical surveys of the beetle fauna, as reported by Olliff (1889) and later authors (Reid *et al.*, 2018a). On the other hand, beetles one centimetre or more in length are generally well collected and well understood taxonomically. From a biodiversity monitoring perspective, this group of beetles is the best for

sampling as it has the best historical record. Large beetles are also more likely to be eaten by exotic rodents and therefore more likely to show change after rodent eradication. There are approximately 78 species of Coleoptera in the Lord Howe Archipelago with body length at least one centimetre.

Exotic rodents arrived on Lord Howe Island in the 1860s (house mouse, *Mus musculus*) and 1918 (black rat, *Rattus rattus*) (Hutton *et al.*, 2007). There had been only one small collection of insects before the 1860s (Reid & Hutton, 2024), so the effect of the mice is largely unknown. However, the rats arrived shortly after two important surveys of beetles, in the 1880s (Olliff, 1889) and 1915 (Lea, 1916) and had a clear impact. Since 1918 several large beetle species have either disappeared or become scarce. Two species, which are now absent from the main island, have been discovered on tiny Blackburn Island, which has remained rodent free (Reid & Hutton, 2019; Reid *et al.*, 2020).

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