

A New Bat Species from Southwestern Western Australia, Previously Assigned to Gould's Long-eared Bat *Nyctophilus gouldi* Tomes, 1858

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ABSTRACT. A distributional isolate in southwestern Western Australia previously assigned to Gould's Long-eared Bat *Nyctophilus gouldi* Tomes, 1858 is demonstrated to be a distinct and previously unnamed cryptic species, based on a lack of monophyly with eastern populations and substantial DNA sequence divergence (5.0 %) at the mitochondrial gene COI. Morphologically both species are alike and overlap in all measured characters but differ in braincase shape. The new species has one of the most restricted geographic ranges of any Australian Vespertilionidae and aspects of its ecology make it vulnerable to human impacts.

Introduction

Long-eared bats of the genus *Nyctophilus* are small to medium-sized species of the cosmopolitan family Vespertilionidae. The genus is centred on mainland Australia and the island of New Guinea (Burgin, 2019). Nine species are recognized from Australia, all of which roost in cavities and crevices or foliage of trees, and buildings (Churchill, 2008), with occasional suspected opportunistic cave use (e.g., Kutt, 2003).

Gould's Long-eared Bat *Nyctophilus gouldi* Tomes, 1858, as currently understood, is found on mainland southeastern Australia extending from far southeastern South Australia, through Victoria and NSW to eastern Queensland as far north as the Atherton Tableland (Pennay *et al.*, 2008). An isolated occurrence in far southwestern Western Australia (WA) was first tentatively recognized by Kitchener & Vicker (1981), following the realization by Hall & Richards (1979) that *N. gouldi* was a species distinct from the larger Greater Long-eared Bat *N. timoriensis* (Geoffroy, 1806). Throughout most of the 20th century *N. gouldi* had been treated as the southeastern Australian subspecies of *N. timoriensis* and the presence there of a larger species had been overlooked prior

to Hall & Richards (1979). Consequently, although specimens of *N. gouldi* from WA existed in research collections including the Australian Museum (AM) in the early 20th century, they remained unrecognized and were assigned to *N. timoriensis*.

Tomes (1858) based his description of *N. gouldi* on two specimens from Moreton Bay (Brisbane, Qld) and one from Bathurst, NSW. Thomas (1915) designated a female from Moreton Bay as lectotype and provided a re-diagnosis that supported its distinction from *N. geoffroyi* Leach, 1821 and *N. timoriensis* (using the name *N. major* Gray, 1844). Unfortunately for most of the remaining 20th century *N. gouldi* was confused with *N. timoriensis* and all authors prior to Hall & Richards (1979) adopted the view of Iredale & Troughton (1934) who treated *N. gouldi* as the southeastern Australian subspecies of *N. timoriensis*.

The unresolved status of different morphological forms within *N. daedalus* Thomas, 1915 from northern Western Australia and the Northern Territory might also be relevant to an evaluation of the taxonomic status of *N. gouldi*. Parnaby (2009) suggested that two or more broadly sympatric species might be contained within *N. daedalus*. A smaller-bodied form of *N. daedalus* with relatively much longer ears and a more gracile skull are features shared with *N. gouldi* but its

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