



Phylogenetic identification and population differentiation of bottlenose dolphins (*Tursiops* spp.) in Melanesia, as revealed by mitochondrial DNA

MARC OREMUS¹ and CLAIRE GARRIGUE Opération Cétacés, BP12827, 98802 Nouméa, New Caledonia; GABRIELA TEZANOS-PINTO, Massey University, Coastal-Marine Research Group, Auckland, New Zealand; C. SCOTT BAKER, Oregon State University, Hatfield Marine Science Center, Marine Mammal Institute, Newport, Oregon 97365, U.S.A.

ABSTRACT

The taxonomic status of many dolphin populations remains uncertain in poorly studied regions of the world's ocean. Here we attempt to clarify the phylogenetic identity of two distinct forms of bottlenose dolphins (*Tursiops* spp.) described in the Melanesian region of the Pacific Ocean. Mitochondrial DNA control region sequences from samples collected in New Caledonia ($n = 88$) and the Solomon Islands ($n = 19$) were compared to previously published sequences of *Tursiops* spp., representing four phylogenetic units currently recognized within the genus. Phylogenetic reconstructions confirm that the smaller coastal form in Melanesia belongs to the same phylogenetic unit as *T. aduncus* populations in the Pacific, but differs from *T. aduncus* in Africa, and that the larger more oceanic form belongs to the species *T. truncatus*. Analyses of population diversity reveal high levels of regional population structuring among the two forms, with contrasting levels of diversity. From a conservation perspective, genetic isolation of *T. aduncus* in the Solomon Islands raises further concern about recent impacts of the commercial, live-capture export industry. Furthermore, the low level of mtDNA diversity in *T. aduncus* of New Caledonia suggests a recent population bottleneck or founder effect and isolation. This raises concerns for the conservation status of these local populations.

Key words: *Tursiops*, Melanesia, phylogeny, genetic diversity, population structure, mtDNA.

The taxonomic status of many regional dolphin populations remains uncertain (e.g., Mendez *et al.* 2013). This is due in part to the fact that Delphinidae is the most speciose family of cetaceans (at least 38 species currently recognized), and is undergoing frequent revisions, including proposals for new species (e.g., Beasley *et al.* 2005, Caballero *et al.* 2007). The Delphinidae also exhibit a wide range of morphological and ecological diversity, among and within species (Perrin 1991, LeDuc 2002). This can obscure species identification, especially in understudied areas where information on morphology, genetics, and life history is usually sparse.

¹Corresponding author (e-mail: oremusm@gmail.com).