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# Calls reveal population structure of the elusive blue whale

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## Abstract

Our inability to directly observe animals in complex environments has limited our understanding of elusive species. The blue whale, although the largest animal that has ever lived, has elusive behaviour. Their pelagic habitat, wide dispersal and low population densities make field observations difficult. The sub-species the pygmy blue whale, listed as data deficient, occurs in the southeast Indian Ocean, yet little is known about their occurrence in the southwest Pacific Ocean. Pygmy blue whales (*Balaenoptera musculus breviceauda*) produce regionally-specific calls-dialects- including the Madagascan, Sri Lankan, Australian, New Zealand and Solomon type calls. We recorded year-round passive acoustic data at six sites, three in the southeast Indian Ocean and three in the southwest Pacific Ocean (2009-2012) and used automated methods to detect occurrence of different call types. Over a three year period two types of pygmy blue whale calls (Australia and New Zealand) were detected, where the ‘Australian’ dialect dominates the southeast Indian Ocean the ‘New Zealand’ dialect dominate the southwest Pacific Ocean. Distribution patterns divide at the Bass Strait (southeast Australia) which appears to be a separation boundary. Differences in temporal occurrence patterns between the ocean basins suggest the whales use these areas differently. Here acoustics plays a vital role in providing not only evidence of a previously unknown population, but also insight into differences in population structure and migration patterns across the ocean basins. We propose that these “acoustic populations” should be considered when assessing conservation needs of blue whales in the Indian and Pacific Oceans.

**Keywords:** Elusive species, pygmy blue whale, *Balaenoptera musculus* ssp, acoustic population, passive acoustics, Tasman Sea

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