

Great whale vocalisations along the Western Australian coast – Their use in biological studies

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The CMST had been conducting passive acoustic studies along the WA coast since 1996. We have recently developed a flexible, high storage capacity, low-power, low-noise logger designed for sea noise, which has greatly expanded our capability. Low frequency signals produced by great whales are a dominant component of ambient sea noise from all offshore locations. These signals may travel hundreds of km along the shelf edge or in deep water. In some instances, such as pygmy blue or humpback whales, calling may be so prodigious as to raise noise levels continuously over the calling bandwidth for months. Several studies have focused on key regions used by whales, such as the Perth Canyon for blue whales. In this location pygmy blue whales visit to feed on small krill over November to June with maximum whale numbers found in February-March. A multifaceted program has studied this phenomenon through oceanography, productivity, krill and whale biology. Passive acoustic studies run year round at this site have revealed a range of great whale species that use or transit the Canyon. We deploy grids of hydrophones in the Canyon in five km triangles to enable tracking of whales, although the analysis of this is complicated by clock drift of the independent loggers and relies on external synchronisation signals. Tracking grids allow us to determine travel movements, and so migratory routes, and to study local whale behaviour. Combining all data sets available along the coast and strategically locating other loggers will allow us to map the movement patterns of whales along large stretches of the WA coast and to estimate whale abundance and behavioural patterns, which for offshore species is currently poorly known. This presentation will focus on great whale acoustics and biology from the Perth Canyon and then consider passive acoustic information available along the WA coast.

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