



Urbanisation of Soundscape: 1 year of acoustic complexity and biodiversity across terrestrial, aquatic, and marine habitats near Perth WA

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ABSTRACT

Australia's Sunset Coast has experienced rapid urbanisation over the past century, particularly around its metropolis Perth. Urbanisation affects natural landscapes, flora, and fauna with lasting impacts on biodiversity often realised and managed too late. Passive acoustic monitoring (PAM) is a remote and cost-effective tool to monitor changes of an environment via its soundscape. We describe and quantify anthropophony, geophony, and biophony based on 1 year of PAM in three local realms: terrestrial (a banksia woodland near Gingin), aquatic (Mosman Bay in the Swan River), and marine (the Perth Canyon). In Gingin, insects dominated the soundscape (followed by anurans and birds), and in the Swan River, this was mullet fish and crustaceans—all active over the summer months and showing strong diel patterns. Whale species dominated in the Perth Canyon (followed by fish), however more so outside of the summer months and with little diel patterns. Geophony was driven by wind and storms across the three realms. Anthropophony was strongest in the Swan River (boat noise). This study provides a holistic insight into the complexity and patterns of the southwestern Australian soundscape and lays the foundation for long-term monitoring and management of environmental change.