



Stromatolite like microbialite community of coastal freshwater lakes (Lake Richmond)

Summary description

The community occurs on a relict foredune plain on Holocene sands at Lake Richmond, Rockingham. It is a thrombolitic community comprising a complex assemblage of photosynthetic cyanobacteria and purple sulphur bacteria, eukaryotic microalgae and true bacteria. The thrombolitic structures generally have an internal clotted structure and are formed through precipitation of calcium carbonate within the microenvironment of microbes as a result of photosynthetic and metabolic activity.



Distribution

The community occurs at a single location at Lake Richmond, located just south-west of Rockingham on the southern Swan Coastal Plain.

Department of Biodiversity, Conservation and Attractions (DBCA) Region: Swan
DBCA District: Swan Coastal

Local Government Authority: City of Rockingham

Habitat requirements


The growth of the community is likely dependent upon continuing supply of freshwater rich in calcium, bicarbonate and carbonate. Calcium carbonate is precipitated out by the biological activity of the microbes. The source of the calcium in the waters of Lake Richmond is probably groundwater that has passed through sand dunes that surround the lake.

The community is located upon relict foredune plain on Holocene sands. These sands are calcareous and composed of quartz sands and shell debris of aeolian origin.

Indigenous interests

Traditional Owner groups: Pinjarup Noongar

A register of Aboriginal cultural heritage sites kept by the Department of Planning, Lands and Heritage lists several sites of Aboriginal significance in the vicinity of this community, including Lake Richmond.



The area is covered by the Gnaala Karla Booja Indigenous Land Use Agreement as part of the South West Native Title Settlement, which formally recognises Noongar people as the Traditional Owners of the south-west region. The Gnaala Karla Booja region is supported by the Gnaala Karla Booja Aboriginal Corporation and umbrella group, the South West Aboriginal Land and Sea Council.

Conservation status

State: Listed as a critically endangered ecological community under the *Biodiversity Conservation Act 2016*. Threatened ecological communities are declared environmentally sensitive areas under the *Environmental Protection Act 1986*.

National: Listed as endangered under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* as 'Thrombolite (microbial) community of coastal freshwater lakes of the Swan Coastal Plain (Lake Richmond)'.

Threatening processes

The major threats to the community include historical and ongoing alterations to the level of salinity and other water quality parameters and lake level, physical crushing, smothering by sediment, rubbish dumping, and degradation of the native vegetation buffer around the lake.

Recovery plan

An interim recovery plan has been produced for this community, outlining the recovery actions that are required to reduce threats and maintain or improve its overall condition. Priority actions include managing access to the site, protecting the microbialites from physical damage, liaising with surrounding landowners to promote sustainable management of their land, monitoring and managing water levels and quality, and rehabilitating the vegetation around the lake's edge.

Key reference

English, V., Blyth, J., Goodale, A., Goodale, B., Moore, L., Mitchell, D., Loughton, B., Tucker, J., Halse, S., & King, S. (2003). *Thrombolite Community of Coastal Freshwater Lakes (Lake Richmond): Interim Recovery Plan 2003–2008* (Interim Recovery Plan No. 122). Department of Conservation and Land Management.

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