



## Stromatolite community of stratified hypersaline coastal lakes (Lake Thetis)

### Summary description

The community occurs in Lake Thetis, Cervantes. It comprises a distinctive and diverse group of benthic microbial assemblages, each producing a mat that is associated with one specific zone within the lake. Crenulate cyanobacterial mats occur in the low-lying areas adjacent to the lake. Lithified stromatolites, resembling those at Shark Bay, with patches of living cyanobacterial mats and nodular mats characterise the littoral areas. Filamentous mats reside in cavities and coat the surface of the flocculant mat in the basin, a mobile diatomaceous mat occurs in the shallows, and thick flocculant mats of phototrophic prokaryotes, other microbes and/or diatoms occur in the central basin. Lake Thetis has benthic microbial mats adjacent to the lithified stromatolites and well-developed flocculant mats in the basin. Under current conditions microbial reef-forming communities and flocculant mat communities are both scarce. Some stromatolites have branching columns.



### Distribution

The community is known from one occurrence at Lake Thetis, 1km east of Cervantes, and occurs within Nambung National Park.

Department of Biodiversity, Conservation and Attractions (DBCA Region): Midwest  
DBCA District: Turquoise Coast

Local Government Authority: Shire of Dandaragan

### Habitat requirements

The typically alkaline and nutrient-poor status of Lake Thetis gives rise to waters that are ideal for the growth of microbial mats and stromatolitic microbialites. The *Calothrix* and *Scytonema* species which dominate the crenulate mats rely on a layer of organic-rich sediment just a few millimetres thick. Most of the microbial mats require sufficient sunlight for growth and survival except for the filamentous mats that can survive in the deeper parts of the lake and experience reduced light penetration.

## Indigenous interests

Traditional Owner group: Yued Noongar

A register of Aboriginal cultural heritage sites kept by the Department of Planning, Lands and Heritage lists the lake as a site of Aboriginal significance.

The area is covered by the Yued 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 Yued region is supported by the Yued 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*.

## Threatening processes

Current or potential threats to the microbial community in Lake Thetis include physical crushing, erosion and sedimentation, nutrient enrichment and pollutants, changes to water levels and salinity, introduced fauna (exotic fish), changes to the vegetation buffer, and drying climate.

## 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 ecological monitoring, clarifying biological threats, protecting from physical damage, monitoring and managing water quality, protecting vegetation buffers, and managing fire and weeds.

## Key references

Department of Conservation and Land Management. (1998). *Nambung National Park Management Plan 1998–2008*. Management Plan Number 37 for the National Parks and Nature Conservation Authority.

Department of Environment and Conservation. (2012). *Stromatolite community of stratified hypersaline coastal lake – Lake Thetis 2012–2017* (Interim Recovery Plan No. 325). Department of Environment and Conservation.

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Grey, K. & Planavsky, N. J. (2009). *Microbialites of Lake Thetis Cervantes, Western Australia – a field guide*. Geological Survey of Western Australia Record 2009/11.

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