



Stromatolite community of stratified hypersaline coastal lakes (Lake Thetis)

TEC Description

The community occurs in Lake Thetis, in 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 or diatoms (or microbes and 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

Department of Biodiversity, Conservation and Attractions (DBCA Region): Midwest
DBCA Districts: Moora (Jurien Bay office)
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* spp. 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

According to the Aboriginal Affairs Aboriginal Heritage Sites Register the area around the lake is a significant site. Traditional owner groups: Juat.

Conservation Status

Listed as vulnerable under WA Minister Environmentally Sensitive Areas list in policy.

Threatening processes

Current or potential threats to the microbial community in Lake Thetis arise mainly from hydrological, chemical and physical change. These include; nutrient enrichment and pollutants, introduced fauna, changes to the vegetation buffer, and changes to water levels and salinity.

Recovery Plan

An interim recovery plan has been produced for this community, and outlines the recovery actions required to reduce the threats and to maintain or improve the overall condition of the community. Recommended actions include ecological monitoring, clarifying biological threats, protecting from physical damage, monitoring and managing water quality, protecting vegetation buffers, and managing fire and weeds.

Citation

Department of Biodiversity, Conservation and Attractions. (2020). Recovery plans and interim recovery plans <https://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/wa-s-threatened-ecological-communities>

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. Perth, Western Australia.
- Department of Environment and Conservation (2012). Interim Recovery Plan 2012-2017 for the Stromatolite community of stratified hypersaline coastal lake - Lake Thetis. Interim Recovery Plan No. 325. Department of Environment and Conservation, Perth.
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- Grey, K. and Plavansky, N.J. (2009). *Microbiolites of Lake Thetis Cervantes, Western Australia – a field guide*. Geological Survey of Western Australia Record 2009/11.

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