



Aquatic Root Mat Community Numbers 1–4 of Caves of the Leeuwin Naturaliste Ridge

Summary description

Four originally described root mat communities occur separately in Easter and Jewel Caves, Strongs Cave, Kudjal Yolgah and Budjur Mar Caves, and Calgardup Cave in the Leeuwin Naturaliste Ridge. Species composition of the assemblage in each of these cave systems differs significantly. Each community is described as comprising a complete food web; the rootlets and their associated microflora providing the primary food source, and root mat grazers, predators, parasites, detritivores, and scavengers completing the interactions. The root mats are produced by karri (*Eucalyptus diversicolor*) in Easter Cave, Jewel Cave and Strongs Cave, karri and peppermint (*Agonis flexuosa*) in Kudjal Yolgah Cave and Budjur Mar Cave, and marri (*Corymbia calophylla*) in Calgardup Cave. Aquatic cavernicoles (cave animals) in these communities include crustaceans, worms, mites, rotifers, tardigrades, and insects. Some of the species appear to be endemic to these cave systems, and some to be confined to a single cave.



Distribution

The four cave communities of the Leeuwin-Naturaliste Ridge span a range of approximately 30km and occur within the Leeuwin-Naturaliste National Park and adjacent reserves.

Department of Biodiversity, Conservation and Attractions (DBCA) Region: South West
DBCA District: Blackwood

Local Government Authority: Shire of Augusta Margaret River

Habitat requirements

The cave streams and pools that contain the root mat communities and other stygofauna rely largely upon infiltration of rainfall from local areas of the caves, and from both local seepage and drainage from other areas. The roots from living trees reach the waters of cave streams or pools and occur due to the permanent water supply, indicating they are entirely dependent on permanent water for survival.

Indigenous interests

Traditional Owner group: Wardandi Noongar

A register of Aboriginal cultural heritage sites kept by the Department of Planning, Lands and Heritage lists a number of significant sites within or nearby these communities, including several of the caves.

The area is covered by the South West Boojarah 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 South West Boojarah region is supported by the Karri Karrak 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: The Aquatic Root Mat Community Numbers 1–4 in Caves of the Leeuwin Naturaliste Ridge are listed as endangered under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

Threatening processes

The most significant threats to the root mat communities are declining groundwater levels, declining rainfall, pollution, invasion by exotic fauna species, and loss of tree root habitat caused by tree death.

Recovery plan

An interim recovery plan has been produced for these communities, outlining the recovery actions required to reduce threats and maintain or improve their overall condition. Priority actions include seeking data about groundwater and rock layers, monitoring and managing water levels in likely catchment areas, undertaking a biological survey of the Karst system, and ensuring land-use practices in the catchment areas do not impact on cave systems.

Key references

Chilcott, S. N. (2012). *The impact of declining groundwater levels on stygofauna communities in the Leeuwin Naturaliste Ridge Cave systems, Western Australia* [Unpublished Honours thesis]. Murdoch University.

Department of Environment and Conservation. (2008). *Aquatic root mat communities numbers 1–4 of caves of the Leeuwin-Naturaliste Ridge Recovery Plan: Interim Recovery Plan 2008–2013* (Interim Recovery Plan No. 281).

Jasinska E. J. J. (1997). *Faunae of aquatic root mats in caves of southwestern Australia: origins and ecology* [Unpublished PhD thesis]. University of Western Australia.

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