Cape Range Remipede Community (Bundera Sinkhole)

TEC Description

The community is known from the Bundera Sinkhole, which is a landlocked body of water with a subterranean connection to the ocean (an anchialine cave). Anchialine ecosystems are inland underground mixohaline waters (seawater dilutes of variable salinity) affected by marine tides, usually with little if any surface exposure. The community comprises a rich stygobitic faunal assemblage composed primarily of crustaceans but also includes a blind fish, *Milyeringa veritas* (blind gudgeon). The crustaceans include atyid shrimp, ostracods, gammarid amphipods, diverse copepods, and a remipede of the class Remipedia (a class of blind crustaceans).

These stygofauna (fauna that live in groundwater systems or aquifers) are mainly relicts from the Tethyan Sea, which in Mesozoic times, between 230 and 65 million years ago, separated Laurasia from Gondwana following the breakup of the Pangaean super-continent. While the Cape Range Remipede Community consists of the same groups of crustaceans recorded from anchialine caves of the Bahamas, the Yucatan Peninsula of Mexico and Cuba, it is quite different at the species level and often at genus and higher levels. It is also the only known occurrence of the crustacean class Remipedia in the Southern Hemisphere.

Distribution

Department of Biodiversity, Conservation and Attractions (DBCA) Region: Pilbara
DBCA Districts: Exmouth
Local Government Authority: Shire of Exmouth

Habitat Requirements

Bundera Sinkhole provides an anchialine habitat with water low in oxygen below a density-induced layer (thermo-halocline) separating brackish surface and deeper saline waters. This sinkhole is the only deep anchialine system known in Australia, and the only continental anchialine system known in the Southern Hemisphere.

Where anchialine systems occur in water-filled sinkholes, as in Bundera Sinkhole, they typically have a freshwater layer overlying seawater that results in a stratified photosynthetic zone and physical and chemical (physico-chemical) profile. These complex physico-chemical conditions are vital to the occurrence and survival of stygofauna and are easily disrupted.

For more information see the department’s website www.dbca.wa.gov.au
Indigenous Interests

An Aboriginal Sites Register is kept by the Department of Indigenous Affairs however, no significant sites are listed in the vicinity of the occurrence. The North West Cape Exmouth Aboriginal Corporation is represented on the North West Cape Karst Management Advisory Committee who assisted in the drafting of, and implementation of, the interim recovery plan for the ecological community.

Conservation Status

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

Threatening Processes

The community is known from a single occurrence that due to its small size and proximity to tracks, is extremely vulnerable to catastrophic events. The main threats to the community include dumping of rubbish or toxic waste; disturbance of the layers in the waterbody, for example, by diving; introduction of exotic species and particularly feral fish; and eutrophication or pollution of the water body in the cave.

Recovery Plan

An interim recovery plan has been produced for the community, and outlines the recovery actions required to reduce the threats to the community and to maintain or improve the overall condition of the community in the known location. Recommended actions include liaison with authorities and land users regarding threatening processes that may affect the community; implementing an access management plan; controlling feral fish; excluding stock from the vicinity of the cave; declaring Bundera Sinkhole and a buffer zone a Commonwealth reserve; monitoring and managing stygo fauna, water quality and levels; ensuring land use planning and development controls protect the community, and controlling feral goats on the peninsula.

Citation


Key References


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