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# CAPE RANGE REMIPEDE COMMUNITY

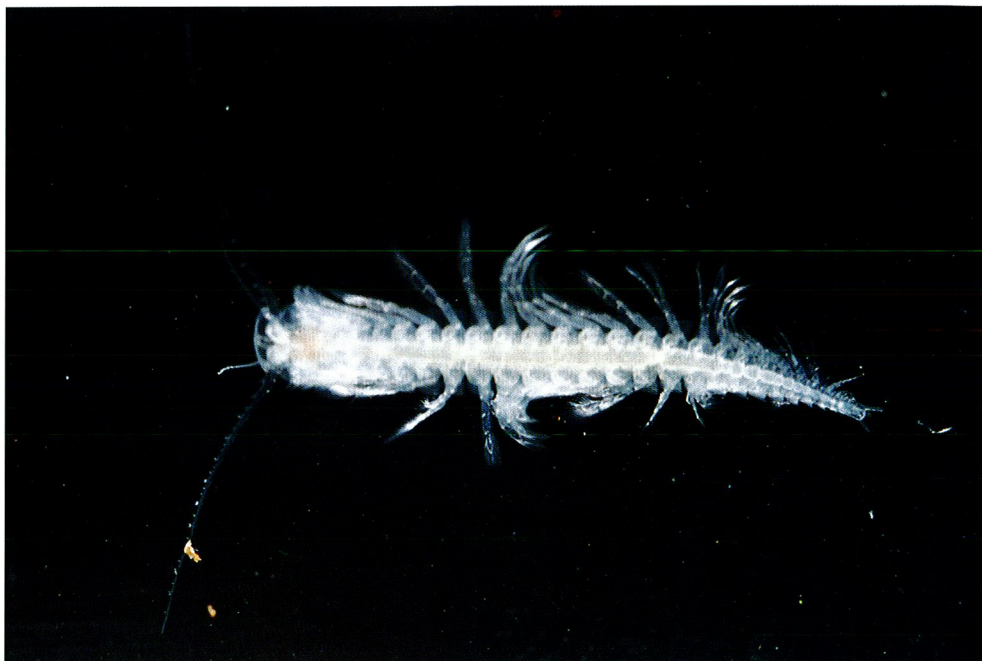
Endangered Ecological Communities of Western Australia

Caves and groundwater on the Cape Range peninsula harbour many species of troglobitic (cave-dwelling) and stygobitic (groundwater-dwelling) animals. Most of these occur nowhere else and some are listed as threatened species under State and Commonwealth legislation.

The animals exist in ecological communities—naturally occurring biological assemblages that occur in a particular type of habitat. The community that occurs in Bundera Sinkhole, known as the Cape Range Remipede Community, contains a unique assemblage of stygobitic animals, including the only known representative of the crustacean class Remipedia in the Southern Hemisphere. It is a 'Threatened Ecological Community' and has been assessed as Critically Endangered. The community is dominated by crustaceans but includes the blind gudgeon, *Milyeringa veritas*. The crustaceans include the remipede *Lasionectes exleyi*, the atyid shrimp *Stygocaris stylifera*, the ostracod *Danielopolina kornickeri*, the gammarid amphipod *Liagoceradocus branchialis*, and the copepods *Bunderia misophaga*, *Stygocyclopia australis* and *Speleophria bunderae*. Bundera Sinkhole has been sparsely sampled and more species are expected to occur in it.

Bundera Sinkhole is located on the coastal plain on the western side of the Cape Range Peninsula. The sinkhole is a water-filled cave. While the surface opening is inland, it has subsurface connections with seawater, and is known as an anchialine system. The sinkhole contains water that is low in oxygen below a density-induced layer separating surface and deeper waters (a thermo-halocline). This is the only deep anchialine system known in Australia, and the only continental anchialine system known in the Southern Hemisphere. Most of the species in Bundera Sinkhole exist only below the thermo-halocline and the complex physico-chemical conditions of this unique habitat can be easily disrupted.

Threats to the community include disturbance of the chemico-physical attributes of the water body in Bundera Sinkhole (for



Cape Range Remipede (*Lasionectes exleyi*). Photo – ©Douglas Elford, Western Australian Museum



A blind shrimp (*Stygocaris stylifera*).

Photo – ©Douglas Elford, Western Australian Museum

example, by diving), dumping of rubbish or toxic waste in the sinkhole, introduction of exotic species such as fish, and eutrophication or pollution of the water body in the sinkhole. In the longer term, a decline in groundwater quality and levels in the Cape Range Group Aquifer could also be a threat.

**SWIMMING AND DIVING ARE PROHIBITED.**

## Recovery of threatened ecological communities

CALM is committed to ensuring that Critically Endangered ecological communities are not destroyed. This is done through the preparation of a Recovery Plan (RP) or Interim Recovery Plan (IRP) that outlines the recovery actions that are required to urgently address those threatening processes most affecting the ongoing survival of the community.

RPs and IRPs are prepared by CALM in consultation with affected parties and implemented by a Recovery Team. The Recovery Team for Cape Range Remipede Community is the North West Cape Karst Management Advisory Committee.



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## Recovery actions that have been implemented to protect the threatened ecological community include:

- the North West Cape Karst Management Advisory Committee has been appointed as the recovery team for the Cape Range Remipede Community;
- an Interim Recovery Plan is being prepared in conjunction with the Committee;
- preparation of a people and vehicle management plan is underway;
- implementation of a permit system for diving in the sinkhole, whereby permits are only granted for essential research, and with conditions attached, including use of re-breathing gear.

## Future actions that will be implemented if possible:

- declaration of a Commonwealth reserve to protect Bundera Sinkhole;
- control of feral fish on Cape Range Peninsula;
- search for other occurrences of the ecological community;
- monitoring of the remipede community to ensure it survives;
- monitoring of water levels and water quality in the sinkhole;
- monitoring and management of groundwater quality and levels for Cape Range Peninsula.

## North West Cape Karst Management Advisory Committee:

This committee has representatives from the WA Department of Conservation and Land Management (CALM), the Shire of Exmouth, the WA Museum, the WA Water and Rivers Commission, the Department of Defence and the WA Speleological Group (Exmouth).

For further information contact CALM's Exmouth District Office on (08) 9949 1676.

IRPs will be deemed a success if essential recovery actions have been implemented, and identified threatening processes have been ameliorated within three years of the Plan's approval.



Blind Gudgeon (*Milyeringa veritas*).

Photo – ©Douglas Elford, Western Australian Museum



Cape Range Liagoceradocus Amphipod *Liagoceradocus branchialis*.

Photo – ©Douglas Elford, Western Australian Museum



View of Bundera Sinkhole. Photo – Peter Kendrick/CALM

