Ningaloo Coast World Heritage area

fact sheet

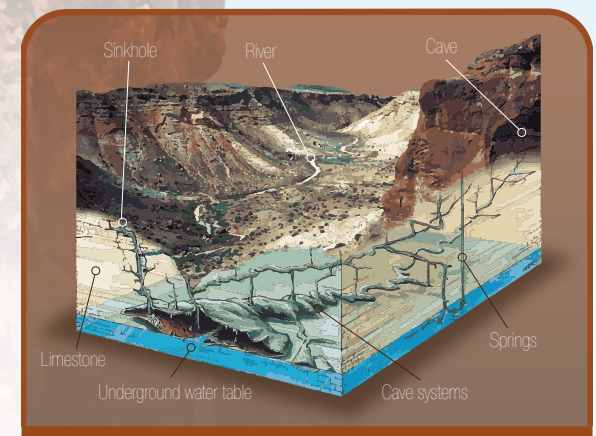
Karst Creatures

What lurks underneath

Beneath the surface of Cape Range is a complex limestone karst system which has formed over millions of years. Cape Range karst system has ridges, shafts, dolines, gorges and more than 500 caves (up to 100 m deep with 6 km across).

Good Looks

There are over 80 types of subterranean fauna in the Cape Range area, most found nowhere else on earth. They include major groups of animals known elsewhere



Karst system, Cape Range National Park

only from east and west shores of the North Atlantic Ocean. Most of these animals have adapted to the permanent darkness of subterranean life, being pale and eyeless. They are mostly small invertebrates (such as spiders, crustaceans, insects and millipedes). One of the two species of blind cave fish is also found here.

Home

These cave creatures spend their entire life cycle within cave systems and could not survive outside. They have adapted to different habitats and are divided into two types:

- **Troglobites** are species that live in the dry parts of very humid caves. They are the types of animals found on the floor of rainforest, which adapted to cave life as the climate became arid.
- **Stygobites** are aquatic species that live in subterranean water. Many have marine relatives but belong to groups now found only in near coastal groundwater.

Bundera sink hole is a collapsed doline that is part of the greater Cape Range karst system and a great example of a habitat for stygofauna

Cape Range karst system has dry habitats that support troglobite cave speices

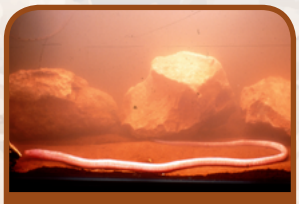
Credit: Tony Howard

Family

The different types of cave creatures tell us different chapters of our planets evolutionary and geological history. For example, the stygobite invertebrate crustaceans are thought to be descendants from the parent population of the shallow Tethys Sea bordering the Supercontinent Pangea, 180 million years ago. The population became separated by the breakup of Pangaea and changes in ocean currents and then evolved separately. Their only relatives today are found in the North Atlantic, central America. The vertebrate fish stygofauna comes from freshwater origins.

Stygofauna species are found in fresh to brackish permanent water holes and sink holes in Cape Range and include:

- Blind gudgeon fish which grows up to 4.5 cm - *Milyeringa veritas*
- Blind cave eel which grows up to 40 cm - *Ophisternon candidum*
- Atyid shrimp - *Stygiocaris genus*
- Clam shrimp - *Welesina kornickeri*
- Cape Range Remipede – *Kumonga exleyi*



The blind cave eel

The blind gudgeon

Credit: Western Australian Museum

More on Karst Creatures

The troglobites are descendants from the inhabitants of rainforest that once covered Australia. After separating from Antarctica in the Miocene (about 20 million years ago), the northern drift of the Australian continent resulted in the drying of the Australian climate and the rainforest retreated to the northern and eastern margins of the continent.

Cape Range troglobites only survived in this arid landscape because of the hot and humid cave environment. This is why all of the Cape Range troglobites (insects, centipedes, millipedes, arachnids and slaters) are not found anywhere else in the world.

Key troglobite species include:

- Micro-whipscorpion – *Draculoides sp.*
- Cape Range draculoides – *Draculoides julianneae*
- Cape Range bamazomus – *Bamazomus vespertinus*
- Cape Range blind cockroach – *Nocticola falbella*
- Cape Range millipede - *Stygiochiropus communis*
- Camerons Cave harvestman – Glennhuntia glennhunti

Favourite Foods

Due to their habitat, very little is known about the diets of cave creatures. The blind gudgeon and eel eat cave crustaceans but also feed opportunistically on surface invertebrates that fall into the water, such as insects and slaters. The remipede crustaceans, like spiders, have large fangs to inject venom into prey, dissolving tissues which they then consume.

Cape Range troglobites: Camerons Cave huntsman spider

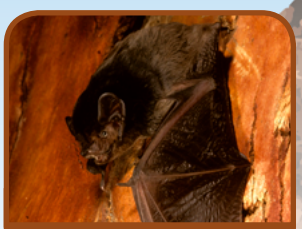
Cape Range millipede

Credit: Western Australian Museum

Friends and Foes

The larger subterranean fauna such as the blind gudgeon and eel have no known predators. Although, being blind, they have no escape response to visual threats, they do however have obvious escape responses when disturbed.

The Cape Range caves are also the perfect home for microbats. Micro bats differ from mega bats (flying foxes) in that they are smaller, eat insects, and are nocturnally active. The warm, humid cave helps maintain their temperature and water balance and roosting in large groups provides warmth and protection. Although microbats have a small wing span, they are very capable at flying and use echolocation to navigate in the dark both inside and outside the cave to find food. Like all bats, microbats cannot stand on their hind legs and spend their time either hanging or flying. Bats are mammals like us and have long elongated finger bones which support the wing membrane.



Microbats such as the goulds wattled bat also live in the Cape Range karst system

Credit: Lochman Transparencies

Helping Hand

The Cape Range Remipede Community of the Bundera Sinkhole and Camerons Cave Troglobite Community are listed as threatened ecological communities. The Cape Range remipede, the blind gudgeon and blind cave eel are listed as vulnerable.

Pollution easily penetrates the karst system, as there is no flowing water on the surface, this is one of many threats to cave creatures. Other threats include dumping rubbish, declining groundwater levels, disturbing the karst limestone and introduction of feral fish species such as guppies.

You can help

Protect these weird and wonderful creatures by:

- conserving water
- not dumping the contents of aquariums into sinkholes
- not disturbing karst habitats

GASCOYNE DEVELOPMENT COMMISSION
Department of Biodiversity, Conservation and Attractions
PARKS AND WILDLIFE SERVICE