

Domain	Bacteria
Kingdom	Bacteria
Phylum	Cyanobacteria

# Stromatolites

3500 MYA – PRESENT

Stromatolites are layered structures built up by communities of *cyanobacteria* (photosynthetic bacteria-like algae) in shallow marine environments. The bacteria form a mat on the seabed where they trap and bind sand and mud from the water. These sediments are then cemented together by carbonate minerals in the water.

Stromatolites form as the bacteria grow upwards towards the light, through the sediment, to form successive layers. Stromatolites may be conical, branching, domal or columnar in shape. Given time, stromatolites form rigid reef structures.

## Fossil Record

Stromatolites are a major constituent of the fossil record for the late Archaean and most of the Proterozoic. They peaked in abundance about 1200 million years ago, before declining in prevalence and diversity. Stromatolites were likely almost wiped out by grazing organisms, implying that reasonably complex multicellular animals existed over one billion years ago. The oldest fossils on Earth are stromatolites from Western Australia that are about 3.5 billion years old. The best modern examples of stromatolites can be found in the intertidal environments of Hamelin Pool, a strongly saline part of Shark Bay, Western Australia.

## Habitat and Lifestyle

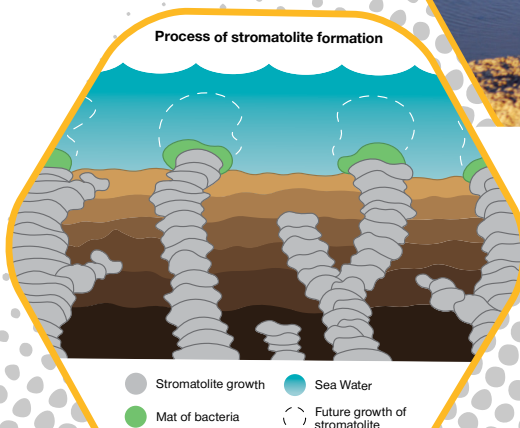
Stromatolites were once widespread, but today they live only in unusual environments, such as around hot springs, in salt lakes, or in highly saline marine environments. In these types of environments there is little competition for space and few animals to eat the stromatolites. *Cyanobacteria* live by extracting energy from sunlight through photosynthesis.

## Fossilisation

As long as their structures remain undamaged, stromatolites fossilise as they form.



Stromatolites at Lake Thetis, Western Australia. Image from MaxPedia.



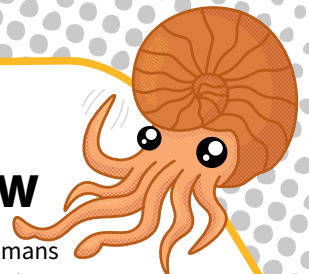
This diagram shows the process by which stromatolites form, layer upon layer.

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## DID YOU KNOW



Without *cyanobacteria*, humans would not exist. *Cyanobacteria* are photosynthetic organisms which use carbon dioxide, water, and energy from the sun to make simple sugars and other organic compounds. When they do this, they release oxygen into the environment. Over the eons, the concentration of oxygen in the atmosphere built up to the 21% it is today.