

A coral reef can reproduce in three main ways which include asexual reproduction, fragmentation, and sexual reproduction.

Sexual reproduction is the most common method and it involves corals releasing sperm and eggs into the water on a specific night of the year. This night is controlled by a variety of factors such as the phases of the moon.

#### Did You Know?

Species of corals that are single-sex corals such as the Elkhorn coral are called gonochoric corals meaning they only produce either sperm or eggs.

Corals that release sperm and eggs into the water rely on fertilisation to occur in the water but there are also coral species where fertilisation occurs within the coral and the larvae develop within the coral and then are released. This is achieved by sperm from another one of the coral polyps within the colony.

Coral reefs also reproduce by a method known as fragmentation. This is the simplest to understand as it involves a small section of the coral breaking off and landing elsewhere.

This fragment will then rejuvenate and grow into an exact replica of its parent colony. As I mentioned before there is no genetic mixing in this method, but it does not rely on the mixing of sperm and eggs.

Fragmentation occurs constantly on the reef due to factors such as wave action that break the coral. However, fragmentation does rely and need healthy corals otherwise the frags will not be able to deal with the stress from being broken.

Most corals can deal with the immense stress caused by fragmentation and they will heal and recover fast however if climate change continues to put pressure on healthy corals then we will have no corals to gain healthy frags from.

Sexual reproduction within corals does vary between species. For example, all the polyps within a Brain coral release sperm and eggs at the same time whereas in a coral such as Elkhorn coral; one colony will produce sperm, and another will produce the eggs.

Once the sperm and eggs have been released they will be fertilised in the water and will reach the surface. However, as they travel to the surface the chances of being eaten are high.



Brain coral "*Faviidae*"

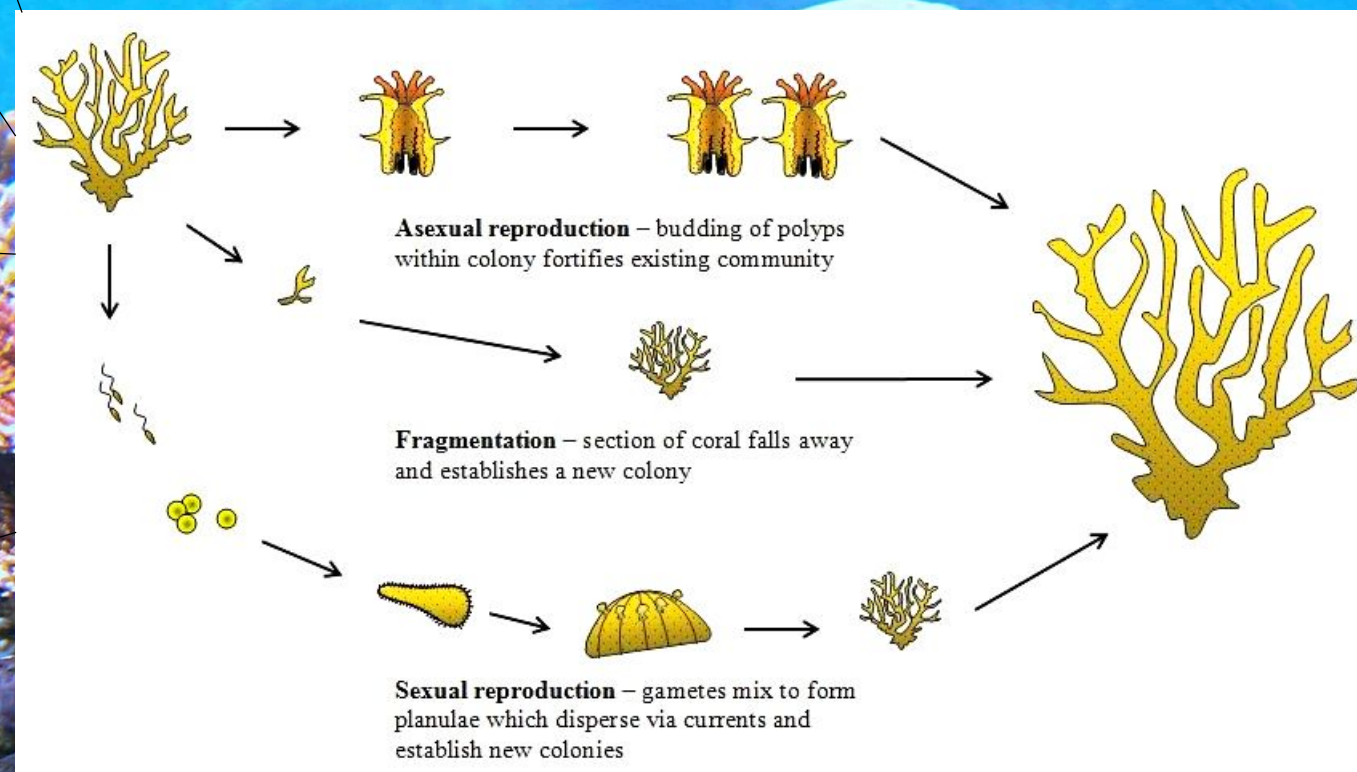
Elkhorn coral "*Acropora palmata*"

#### Did You Know?

The reason larvae travel to the surface is because they are attracted to the light from the moon.



## The Science Behind How A Coral Reef Reproduces



As the larvae travel on the surface of the water they will eventually land on the bottom of the ocean floor elsewhere. Once they land they will metamorphose into a coral polyp. This one polyp will then multiply by dividing in half.

This is how all coral systems start and it is extremely upsetting when reef systems that have taken years to grow from one polyp are turned to calcium carbonate skeleton.



The photograph above shows a coral species releasing eggs into the water. Witnessing the event in the wild is truly magical.

We have also been able to manipulate corals into spawning in captivity. This has been undertaken by the Horniman Museum in London. They have studied the exact conditions needed to stimulate coral spawning such as the moon and the water temperature. They achieved massive success and raised the fertilised larvae



It is hoped that our ability to spawn corals in captivity will allow us to try and adapt corals to sustain high temperatures that are being created by climate change.

We will then be able to raise new corals that can survive climate change and save an ecosystem that has more importance than we are aware of.

Corals reef systems also reproduce by asexual reproduction which is the budding of new polyps within the coral species. It allows a young coral to develop from an adult polyp creating new individuals that are exactly the same as the parents.

This method involves the least amount of genetic mixing whereas mass spawning involves a mixing of sperm and eggs potentially strengthening the gene pool.