Why Is the UAE Creating the World's Largest Artificial Reef?

The UAE has announced it intends to create the world's largest artificial coral reef off the coast of Fujairah. Covering an estimated 300,000 square metres, the reef will comprise a joint venture between the Emirati Ministry of Climate Change and Environment and the Florida Keys National Sanctuary.

The initiative is a response to the massive coral bleaching which has ravaged the reefs off the Emirati coastline over the last few years. As they are an important habitat for all kinds of marine flora and fauna, supporting coral reefs is a key method of sustaining the diversity of ecosystems in the waters in and around the UAE.

A dire problem

Water pollution comes in many forms. Improper disposal of waste products (predominantly those constructed from plastic), agricultural run-off and an excess of nutrients in the water can all have seriously damaging consequences for the plant and animal life which lives in our rivers, seas and oceans.

Meanwhile, rising sea temperatures are another significant threat to life beneath the waves. Climate change results in global warming and unusual weather events, such as the extreme heat and reduced winds which afflicted the Emirati coastline in 2017. This, in turn, meant that evaporation from the sea was less than normal, leading to elevated temperatures below the water level. As a direct result, over 90% of coral reefs off the UAE coast suffered partial or complete bleaching.

A large-scale response

When coral becomes bleached, it can no longer provide nutrients to the various animals which call it home, causing them to leave in search of a new habitat. This is disruptive to the animals themselves and lethal to the coral. For those reasons, environmentalists from the UAE and the USA have been working together to try and find a solution.

Due to the fact that many of the conditions and stressors in waters surrounding both the UAE and Florida are essentially the same, those behind the project believe that sharing their knowledge and expertise could be beneficial to both parties. Floridian authorities are planning a 10-year project to repopulate 500,000 one-metre colonies across seven sites. Meanwhile, the Fujairah reef aims to introduce 300,000 mature

colonies in a single location, making it easily the world's largest artificial reef of its kind.

Giving nature a helping hand

In order to accelerate the growth of these new colonies and achieve remarkable results in a tight timeframe, the researchers plan to use a method known as "micro-fragmenting". This involves placing one or two individual polyps – which are the tiny organisms that make up a coral colony – onto a ceramic disc the size of a coin.

The polyps then invest all of their energy into covering the entire surface area of the disc, at which point they will be relocated onto a larger boulder alongside several other discs. By encouraging the polyps to grow outwards rather than upwards, the researchers can accelerate the growth significantly. What would normally take 25 years can be achieved in just three or four – as long as the colonies cooperate rather than compete with each other. This can be ensured by using the same genetic strain of polyps every time, something which shouldn't pose a problem to the scientists.