

PE link to early origins of life

Bacteria-based system in coastal rock pools studied by scientists

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COULD the Eastern Cape have played a role in the very origins of earthly life? A recent discovery of one of the world's earliest life forms on the south of Port Elizabeth's coast suggests it could.

In a handful of rock pools around the globe, this early form of life – dating back 3.5 billion years ago, according to fossil records – can still be found.

It is a bacteria-based system responsible for “growing” the calcified walls of coastal rock pools – and it was recently discovered, in abundance in the Eastern Cape.

Regarded as the oldest type of biologically mediated calcified formations on Earth, other rare living examples of these systems are found in Shark Bay in Australia and the Exumas in the Bahamas.

But scientists have been taken aback by the sheer number found along the coast, south of Port Elizabeth.

These colonies are giving scientists a glimpse into the hydrospheric (water) conditions that prevailed at the very onset of life on earth.

“They were the only living things in those days. They disappeared with the advent of more evolved organisms,” Professor Renzo Perissinotto, who holds a research chair in shallow water ecosystems at NMMU, said.

He is part of a high-profile team – including two other South African chairs and five international collaborators from universities in Norway, Italy, Poland, Sweden and the United States – which has been studying this phenomenon over the past two years.

“These bacteria-based systems provided the first photosynthetic process that led to the transitioning of the early Earth's atmosphere into its current, productive oxygen-rich state,” Perissinotto said.

These formations – called living marine stromatolites – occur when freshwater seepage from the land comes together with seawater in the inter-tidal area, and cyanobacteria (blue-green algae), under certain conditions, play a role in depositing calcite crystals, he said.

“Although other rare, isolated examples of similar formations have been reported to occur from Port Elizabeth to Tofu in Mozambique, the recent discovery of numerous and closely spaced living stromatolites on the coastline south of Port Elizabeth appears to be extraordinary,” he said.

“We have discovered more than 500 actively growing marine stromatolites from Cape Recife to Storms River.

“They are a unique feature and are very different to those found in Australia and the Bahamas.”

If you saw one today, you would be forgiven for thinking it was just a stagnant rock pool covered in a green carpet of algae.



ANCIENT SECRETS: NMMU's Professor Renzo Perissinotto, right, collects samples with students at rare living rock pool systems in the Eastern Cape
Picture: LYNETTE CLENNELL