

Towards an understanding life on early Earth: microfossils from the c. 2.4 Ga Turee Creek Group, Western Australia

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It is difficult to know what to look for when searching for life on Mars, or elsewhere in the universe, so we first revert to studying the one example of life that we do know of: that of planet Earth. Life on Earth has been quite complex for at least the past 540 million years, but for over three billion years before that, life consisted of only simple microscopic organisms. Thus, if life were to exist elsewhere, we would expect it to consist of, in the very least, simple microbial forms like those preserved from the early Earth.

A recently discovered assemblage of well-preserved microbial fossils from the c. 2.4 Ga Turee Creek Group, Western Australia, provides insight into the diversity of Paleoproterozoic life. Described are eighteen different microfossil morphologies within nodular and bedded black chert units that form the deeper-water portion of a shallow-water stromatolite-thrombolite reef complex. These two black chert facies preserve distinctly different microbial communities: a deeper-water, primarily benthic community in the nodular cherts, and a transported, likely phototrophic, community in the bedded cherts. Combined, this assemblage provides a snapshot of what an ecosystem at c. 2.4 billion years would have looked like. We find a greater diversity in microbial life than what was previously thought to exist at this time.

This is a valuable data set for understanding what life on the early Earth would have looked like, and in what types of environments it inhabited, adding to the pool of information that will aid in our search for life elsewhere in the universe.