

ARE THE ALIENS EXTINCT?

Astrobiologists from the Australian National University announced this week (January 21, 2016) that if life did indeed arise on other planets in our galaxy it would likely have become extinct very quickly. The extinctions would be due to runaway heating or cooling on the fledgling planets. The researchers believe this is why we haven't yet gotten definitive proof that advanced alien civilizations reside on other planets in our galaxy. It's because, they say, it's rare for life on other worlds to advance. They call their model – which calls for near-universal early extinction – the Gaian Bottleneck.

Aditya Chopra and **Charley Lineweaver** are authors of the paper, which is published in the journal *Astrobiology*. In a statement from ANU they said:

The universe is probably filled with habitable planets, so many scientists think it should be teeming with aliens. But early life is fragile, so we believe it rarely evolves quickly enough to survive.

If their model is correct, why was Earth different? The ANU team think that living creatures are an integral part of the process of making a habitable world. Most early planetary environments are unstable and untenable. To produce a habitable planet, life forms are needed to regulate greenhouse gases such as water and carbon dioxide to keep surface temperatures stable. While most astrobiologists would agree with that statement, but the exception happened on Earth, and it may have happened somewhere else, too. An early Armageddon may occur on some planets some of the time and may thin the cosmic herd, but it is hard to imagine wiping the herd out.

Consider that in 65 million years, mammals went from being small rodents to becoming us. In other words, even if the neighbourhood deteriorates, life has time enough to adapt. Still, Chopra and Lineweaver believe most habitable world's would go the way of Venus or Mars, which – though possibly habitable billions of years ago, in the early days of the solar system – are not habitable now by creatures like human beings. Venus underwent a runaway greenhouse effect, so that its surface temperatures are today hot enough to melt lead. Mars is closer to being earthlike, but it is extremely cold and has such a thin atmosphere that earthlings can't stand on its surface without spacesuits.

Since we don't know who's right – what good is this research? A possible outcome might be a leap forward in our concept of habitable zones and habitable worlds in the Goldilock zone. Maybe thinking in terms of life arising and creating feedbacks, racing the clocks to help stabilize an atmosphere, will deepen our understanding of those ideas and ultimately help us pinpoint planets where advanced life forms might exist. Meanwhile, Chopra and Lineweaver used the Gaian Bottleneck model to make predictions about what our descendants might find, as they someday begin to explore other worlds in the galaxy:

It's most likely that the vast majority of fossils in the universe will be from extinct microbial life, not from multicellular species such as dinosaurs or humanoids that take billions of years to evolve.

Are these the only sorts of fossils we're ever likely to find on worlds orbiting distant suns? Ancestors of early marine life, remnants of land-dwelling lichen or other microbial colonies?

Time will tell if that is true

AK from EarthSky Notes



Australian astrobiologists say an early Armageddon on most distant worlds makes advanced life-forms unlikely. If true, our Milky Way galaxy is a lonely place. And if their 'Gaian Bottleneck' model is correct, then most advanced alien species never come to be. In that case ... so long, aliens.



This image shows fossils of life-forms of land-dwelling lichen