

Grand Finale at the Globe

Suppose you want to make a reservation for the farewell live performance at The Globe, as the Ecosystem Circus comes to the end of its record-breaking worldwide tour. This is not an undertaking for the faint-hearted. The Globe is one of the most exclusive venues in the entire universe, scene of many of the greatest dramas ever seen. To have a chance of booking your place to witness the mass extinction to end all mass extinctions -- an event that will exterminate at least 10 million species of multicellular life-forms -- you'll need perseverance on a truly superhuman scale.

That means patience, and plenty of it. You must be prepared for the long haul, roughly eight billion years from the Big Bang just to get onto the waiting list. That's because your best chance of observing the extermination of 10 million species of complex life-forms is to find somewhere with more than 10 million. For that you're going to need a galaxy. There's no shortage of those, but you'll want one with a well-behaved middleweight star situated in a relatively uneventful region of that galaxy. There are plenty of those as well, but yours will need a good sprinkling of cosmic detritus, such as carbon, nitrogen, oxygen, silicon and iron, to be spilled out into rocky planets while it forms. That requires waiting till a steady supply of supernovae have blasted such stuff into space before your star gets born. Not forgetting a sprinkling of radioactive elements, because your planet will need a nice hot core that doesn't cool down too fast. Hence the long wait.

And the wait doesn't end there. You're going to have to find a planet that keeps liquid water on its surface for several billion years, give or take a couple of snowball eras when the water has to lurk under a planet-wide ice sheet. That means your planet will need plenty of methane and carbon dioxide in the atmosphere at first, while its young sun is working towards full brightness, plus a way of extracting the methane after about a billion years, and then gradually drawing down most of the carbon dioxide, starting after about another billion years, as that sun heats up.

By that time simple life should have got started. The odds against that aren't extreme. But you'll still need to check an awful lot of worlds or have an awful lot of luck to find a planet where complex organisms arise, and an awful lot of patience, because even then it will take nearly four billion years to achieve a sufficient diversity of life, during which time your planet could cope with several serious asteroid impacts, but not a massive planetary collision.

Even if your planet gets that far unscathed, there is no guarantee that conscious creatures will arise that know how to control fire, make weapons, construct wheels, invent writing, and of course come up with the idea of joint-stock corporations with limited liability. To find a planet with such beings you'll need another extraordinary slice of luck, or an incredibly arduous search effort. But if you do chance on such a freakish planet, your wait will be almost over. The only other thing you'll need then is lots of those creatures, billions of them -- people like us, in other words, who think that an adversarial party system is an admirable form of government, and who let our leaders convince us that corporations have an inalienable duty to pursue profit ahead of everything else. Then at last, in a matter of mere decades, you'll be able to join the select band of spectators who will experience the thrill of viewing the demise of 10 million multicellular species (near as damn it) including us.

[Richard Forsyth, June/December 2019.]