

The Reduced Drake Equation

How more common do we expect life to be in the universe if we don't concern ourselves with intelligent life or life which attempts to communicate with us?

Param	Assume value	Description
N_{star}	1×10^{11}	Number of stars
f_p	0.2	% that have planets
n_e	0.5	% of planets capable of life
f_l	0.5	probability of developing life given capability
f_i	0.2	probability of intelligence given life
f_c	0.2	probability of communication given intelligence
f_L	1×10^{-6}	% of planet's lifespan for which communication will be occurring

$$\begin{aligned}
 N &= N_* \cdot f_p \cdot n_e \cdot f_l \cdot f_i \cdot f_c \cdot f_L \\
 &= 1 \times 10^{11} \cdot 0.2 \cdot 0.5 \cdot 0.5 \cdot 0.2 \cdot 0.2 \cdot 1 \times 10^{-6} \\
 &= 200
 \end{aligned}$$

Assuming you don't expect "intelligent" microbes, if we exclude the intelligent life requirement (f_i), and then exclude the communication requirements as well (f_c). I would increase the value to $f_L = 1 \times 10^{-5}$ since we expect microbial species to have better chances of longer survival, so perhaps...

$$\begin{aligned}
 \hat{N} &= N_* \cdot f_p \cdot n_e \cdot f_l \\
 &= 1 \times 10^{11} \cdot 0.2 \cdot 0.5 \cdot 0.5 \cdot 1 \times 10^{-5} \\
 &= 5000
 \end{aligned}$$