Poisson:

$$\mathrm{pmf}(k) = \frac{\lambda^k}{k!} e^{-\lambda}$$

where λ is the average number of other choices appearing between occurences of the marked choice.

average reward given to the marked choice is

$$\begin{aligned}
\overline{R} &= \sum_{k=0}^{\infty} \frac{1}{k+1} \frac{\lambda^k}{k!} e^{-\lambda} && (1)\\
&= \sum_{k=0}^{\infty} \frac{\lambda^k}{(k+1)!} e^{-\lambda} && (2)\\
&= \frac{1}{\lambda} \sum_{k=1}^{\infty} \frac{\lambda^k}{k!} e^{-\lambda} && (3)\\
&= \frac{1}{\lambda} \left(1 - e^{-\lambda}\right) && (4)
\end{aligned}$$

Sanity check:

$$\lim_{\lambda \to 0} \overline{R} = 1 \qquad (5)$$

$$\lim_{\lambda \to \infty} \lambda \overline{R} = 1 \qquad (6)$$

In other words, the relaxed reward computed by the algorithm increases with selection rate of the marked choice. In the equilibrium distribution, choices are selected according to their relaxed rewards.