$$\begin{cases} \dfrac{dN(t)}{dt} = N(t)Kp\left(1 - \dfrac{N(t) + r\int_0^t N(t')dt'}{C(t)}\right) - N(t)r \\ \dfrac{dC(t)}{dt} = \left(\dfrac{dN(t)}{dt} + N(t)r\right)K\left(1 - \dfrac{C(t)}{T}\right) \end{cases}$$