

Permanence and Stability for non-autonomous Nicholson's blowflies systems

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Abstract

We study the global asymptotic behaviour of solutions for a Nicholson's blowflies system with patch structure and multiple discrete delays:

$$x'_i(t) = -d_i(t)x_i(t) + \sum_{j=1, j \neq i}^n a_{ij}(t)x_j(t) + \sum_{k=1}^m \beta_{ik}(t)x_i(t - \tau_{ik}(t))e^{-c_{ik}(t)x_i(t - \tau_{ik}(t))}, \quad i = 1, \dots, n, \quad (1)$$

where all the coefficients and delay functions are continuous and nonnegative. Sufficient conditions for both the extinction of all the populations and the permanence of the system are given. By refining the assumptions for permanence, criteria for the global stability of (1) are provided. Results can be found in [1, 2].

References

- [1] T. Faria, Permanence and exponential stability for generalised nonautonomous Nicholson systems, *submitted* (2020).
- [2] T. Faria, R. Obaya, A. M. Sanz, Asymptotic behaviour for a class of non-monotone delay differential systems with applications, *J. Dynam. Differential Equations*, **30** (2018), 911–935.