Xu, R.; **Davidson, F. A.**; **Chaplain, M. A. J.**
Persistence and stability for a two-species ratio-dependent predator-prey system with distributed time delay. (English) Zbl 1008.34065
J. Math. Anal. Appl. 269, No. 1, 256-277 (2002).

The family of models introduced here and the results achieved are generalisations to a wider class of delays of the ones obtained in [*E. Beretta* and *Y. Kuang*, Nonlinear Anal., Theory Methods Appl. 32, No. 3, 381-408 (1998; Zbl 0946.34061)]. The reference system without delays is the Michaelis-Menten predator-prey model which is very similar to the better known Michaelis-Menten-Holling predator-prey model.

For this family of models, the uniform persistence of positive solutions is proven under certain conditions. The unique positive equilibrium of this system is then considered and results on its local and global stability properties are presented. An example of this generalised family of models is then introduced and explored numerically with MATLAB.

Reviewer: Domingo Salazar (Oxford)

MSC:

34K20	Stability theory of functional-differential equations
92D25	Population dynamics (general)

Cited in **7** Documents

Keywords:

time delay; uniform persistence; local stability; global stability; Michaelis-Menten predator-prey model

Software:

Matlab

Full Text: DOI

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