

A predator-prey model with generic birth and death rates for the predator and Beddington-DeAngelis functional response

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Since the Lotka-Volterra model was published, a lot of work has been devoted to studying the interactions between predator and prey populations. In 2014, A. J. Terry proposed a new model [1], which is a generalization of the well-known Rosenzweig-MacArthur model [3]. In his model Terry removes the hypothesis of a constant death rate and a linear (with respect to the functional response) growth rate for the predator, that underline the Rosenzweig-MacArthur model (and other classical models). This certainly makes the model more realistic.

It should be mentioned, however, that a Holling Type-II functional response is used in the Terry's model. In [2] it is discussed that in many cases the Beddington-DeAngelis functional response is to be preferred, since it gives a better fit to experimental data. Thus, we further modify the Terry's model by using the Beddington-DeAngelis functional response and study the behaviour of the solutions of the obtained system.

References

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