Global Versus Structured Model of a Zooplankton - toxic Phytoplankton System

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A comparison of the qualitative behaviour of two models : a global model and a delayed structured model of a Zooplankton toxic phytoplankton system is proposed.

Infinite delay is used to describe the contribution of toxic substances consumed in the past by zooplankton individuals to the evolution of the zooplankton population by increasing their mortality.

The stability analysis of the two systems exhibits some behavioural differences.

References

- Edwards, A.M. & Brindley, J. (1999) Zooplankton mortality and the dynamical behaviour of Plankton population model. Bull. Math. Biol., 61, 303.
- [2] Chattopadhyay, J., Sarkar, R. R., El abdllaoui, A. Adelay differential equation model on harmful algal blooms in the presence of toxic substances. IMA J. Math. Appl. Med. Biol (2002) 19, 137-161.
- [3] El abdllaoui, A., Chattopadhyay, J., Arino, O. Comparisons, by models, of some basic mechanisms of the zooplankton-toxic phytoplankton system. Math. Models Methods Appl. Sci. 12 (2002), n. 10, 1421-1451.

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