

Wang, C. C.; Liu, C. C.

Chaotic dynamic analysis of aquatic phytoplankton system. (English) Zbl 1407.34059
Math. Probl. Eng. 2014, Article ID 586262, 8 p. (2014).

Summary: This study analyzed the effect of nonlinear dynamic parameter of phytoplankton toxin emission on the system. Many previous studies have indicated that the zooplankton, mollusks, and habitat factors generate nonlinear chaotic dynamic behavior, which is hardly controlled random behavior. Therefore, in order to understand in what parameter conditions the system has this nonlinear behavior, the linear and nonlinear behaviors resulting from different conditions are discussed. This study used numerical analysis of differential transformation method to analyze the phase of system and applied bifurcation diagrams, trajectory diagrams, Poincaré maps, and spectrograms to discuss and validate whether the system has chaos phenomenon.

MSC:

- 34C28** Complex behavior and chaotic systems of ordinary differential equations Cited in 1 Document
- 92D25** Population dynamics (general)
- 92D40** Ecology
- 34C60** Qualitative investigation and simulation of ordinary differential equation models
- 37N25** Dynamical systems in biology

Full Text: [DOI](#)

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