

Biological mechanisms of coexistence for a family of age structured population models

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Abstract

In this work we construct a family of age structured predator-prey models in order to introduce different mechanisms of biological interest that lead us to infer conditions where coexistence among both species may be possible. We analyze the relationship of existence of stable solutions, mathematical equivalent to coexistence, with biological mechanisms such as intraspecific competition, selective predation and cannibalism among predators.

Key words: age structured models, coexistence, biological mechanisms

Highlights

- We construct a family of predator-prey models with age structure in both species.
- We introduce biological mechanisms in the models to achieve coexistence.
- Factors of intraspecific competition, selective predation and cannibalism among predators are included.
- Numerical and Analytical parametric studies of the models are carried out.

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