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MODELING PREDATOR EVOLUTION IN INTERACTING SPECIES COMMUNITY

The paper proposes a model of a predator evolution in a community of two species which interact as a predator and a prey. We assume that the predator's fitness depends on food supplies. The model was examined analytically and numerically. It is shown that the fixed-point stability loss can go according to both, the Neimark-Sacker scenario and the period doubling bifurcation. The model reveals bistability and multistability; therefore, initial conditions determine which of the coexisting dynamic modes will be attracting. It is demonstrated that different dynamic modes can be implemented depending on the prey abundance.

Keywords: evolution, natural selection, community dynamics, predator-prey, mathematical modeling, polymorphism, bistability.

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