随机配对的食饵-捕食者模型

张天然

西南大学数学与统计学院, 重庆 400715

摘要   建立了食饵具有性别结构的食饵-捕食者模型,其中食饵两性的配对是随机的.结论表明: 没有偏食的捕食不能改变食饵的性比,偏食可以改变食饵的性比;若食饵两性的出生率相等, 任意的偏食都可以消除周期振荡;若食饵两性的出生率不相等,较大的偏食总能消除周期振荡, 周期振荡的消除与否由偏食系数和食饵两性的出生率之比共同决定.

关键词   两性,偏食,性比,周期振荡.

分类号 34C60, 92B05

Prey-Predator Model with Random Mating for Prey

ZHANG Tianran

School of Mathematics and Statistics, Southwest University, Chongqing 400715

Abstract In this article a prey-predator model with sex structure in the prey population is proposed, where random mating, without the formation of permanent male-female couples, is prevailing. By mathematical analysis it is shown that predation without sex bias can't alter the sex ratio of the prey and sex-biased predation can do, that sex-biased predation can always eliminate periodic oscillation behavior when the birth rates of female and male prey are equal, that large sex-biased predation rate can always eliminate oscillation behavior when the birth rates of female and male prey are not equal, and that the elimination of oscillation is determined by the sex-biased rate and the ratio of birth rates of male and female prey.

Key words   Two-sex   sex-biased predation   sex ratio   periodic oscillation.

DOI:

通讯作者