***Introduction to Theoretical Ecology Assignment 8***

Lotka-Volterra Predator-Prey Model with Logistic Prey Growth

The basic Lotka-Volterra predator-prey model assumes an exponential prey growth. A modification of the original model is to include density-dependent logistic prey growth:

, where *r* is the intrinsic growth rate of prey, *K* is the carrying capacity of prey, *a* is the capture rate of predator, *e* is the conversion efficiency, and *δ* is the mortality rate of predator.

1. Find the equilibrium points of the system.
2. Perform local stability analysis for the internal equilibrium.
3. Simulate the system for 100 time steps and visualize the population trajectories of prey and predator (you can use any parameters of your choice).