

MAP 4484 Modeling in Mathematical Biology: Population Dynamics

I. Population Dynamics

A. Definition and Overview

1. Definition of population dynamics
2. Overview of population dynamics

B. Population Growth

1. Exponential growth
2. Logistic growth
3. Carrying capacity

C. Population Structure

1. Age structure
2. Sex structure
3. Spatial structure

D. Population Interactions

1. Competition
2. Predation
3. Mutualism

Problem Solving Strategies:

1. Understand the basic concepts and definitions of population dynamics.
2. Analyze the data given in the problem to determine the type of population growth or interaction.
3. Use mathematical models to solve the problem.
4. Identify the parameters of the model and use them to calculate the population size or other relevant information.
5. Use graphical representations to visualize the results.
6. Interpret the results and draw conclusions.