

Life History

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Section 1: Life Cycles and Life Histories

Introduction to reproductive strategies, life cycles, and the foundations of life history. Exploration of a diversity of life cycles and life histories found in marine plants and animals. Examples of classic studies of clutch size evolution in birds.

- Prelude: The Game of Life
- The Wondrous Diversity of Life Cycles
- Investigating Life History
- Life History Variation Arises from Constraints
- Example: How Many Eggs to Lay?
- Section Summary
- Ask Your Instructor

Section 2: Life History Parameters

Introduction to demography and the parameters employed to describe population structure: birth and death rates, survivorship, mortality, and fecundity. Calculating birth and death rates using simulated data. Describing and contrasting populations using age pyramids. Discussion of how fecundity and survivorship vary with age.

- Life History Strategies Are Complex and Varied
- Introduction to Demographics
- Age Structure
- Population Responses: Barnacles vs. Dolphins
- Age Structure in Human Populations
- The Shape of Age Pyramids
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Section 3: Life Tables and Survivorship Curves

Introduction to life tables. Construction of a simple dynamic life table using a simulation of a human cohort. Calculation of population growth rates from life table data. Comparison of life table data and population growth in developing and developed nations.

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- Life Table Data Collection
- Survivorship
- Classifying Survivorship Curves
- Fecundity
- Net Reproductive Rate
- Generation Time
- Population Growth Rates from Life Tables
- Ecological Management Using Life Table Data
- Developed vs. Developing Nations
- Section Summary
- Ask Your Instructor

Section 4: Trade-Offs

Discussion of several common trade-offs using a fish simulation. Introduction of the principle of

allocation and ways of classifying life histories, including r- and K-selection, Grimes, and Winemiller and Rose classifications. Experiment investigating fish reproductive strategy in simulated habitats with differences in environmental stability.

- Natural Selection at Work
- Trade-Offs with Age of Maturity
- Fecundity and Body Size
- The Principle of Allocation
- Classifying Life Histories
- Disturbance vs. Stress Classification
- Winemiller and Rose Classification
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- More Complex Trade-Offs
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