31. Predation, Competition, and Spacing *(Chapters 52, 53)*

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### I. Predation *(1242-1243, 1252-1255)*

-Consumption of one species by another

A. Rationale and Form of the Model

-Based on exponential growth model

-Predator prey cycles

B. Graphical Representation

1. The interaction

2. Production of population cycles

# C. Predator Regulation of Prey Populations

1. Prey population size

2. Prey population composition

D. Applications for Pest Control

1. Examples

2. Population consequences of pesticide use

-Pests have a higher r than predators

-Pests may develop resistance

II. Competition *(1255-1257)*

1. Definitions

-Demand by two or more organisms for the same limited resources

1. Competition

2. Limiting resources

3. Exploitative competition

4. Interference competition

-Intraspecific competition is competition within one species

-Interspecific completion is completion between species

-Competitive exclusion principle: no two populations can rely on the same recourse in nature and continue to coexist

-If species are sympatric (living in the same place) they must use different resources

B. Intraspecific Competition

1. Population density and logistic growth

2. Data from single‑species lab cultures

C. Interspecific Competition

1. Lab experiments on interspecific competition

2. The competitive exclusion principle

3. Indirect field evidence: resource partitioning and character displacement

4. Direct field evidence: addition and removal experiments

III. Spacing in Animals *(1224-1225)*

A. Intensity of Intraspecific Competition

B. Patterns of Dispersion

C. Individual Distance

# D. Territories of Animals

1. Definition of territory

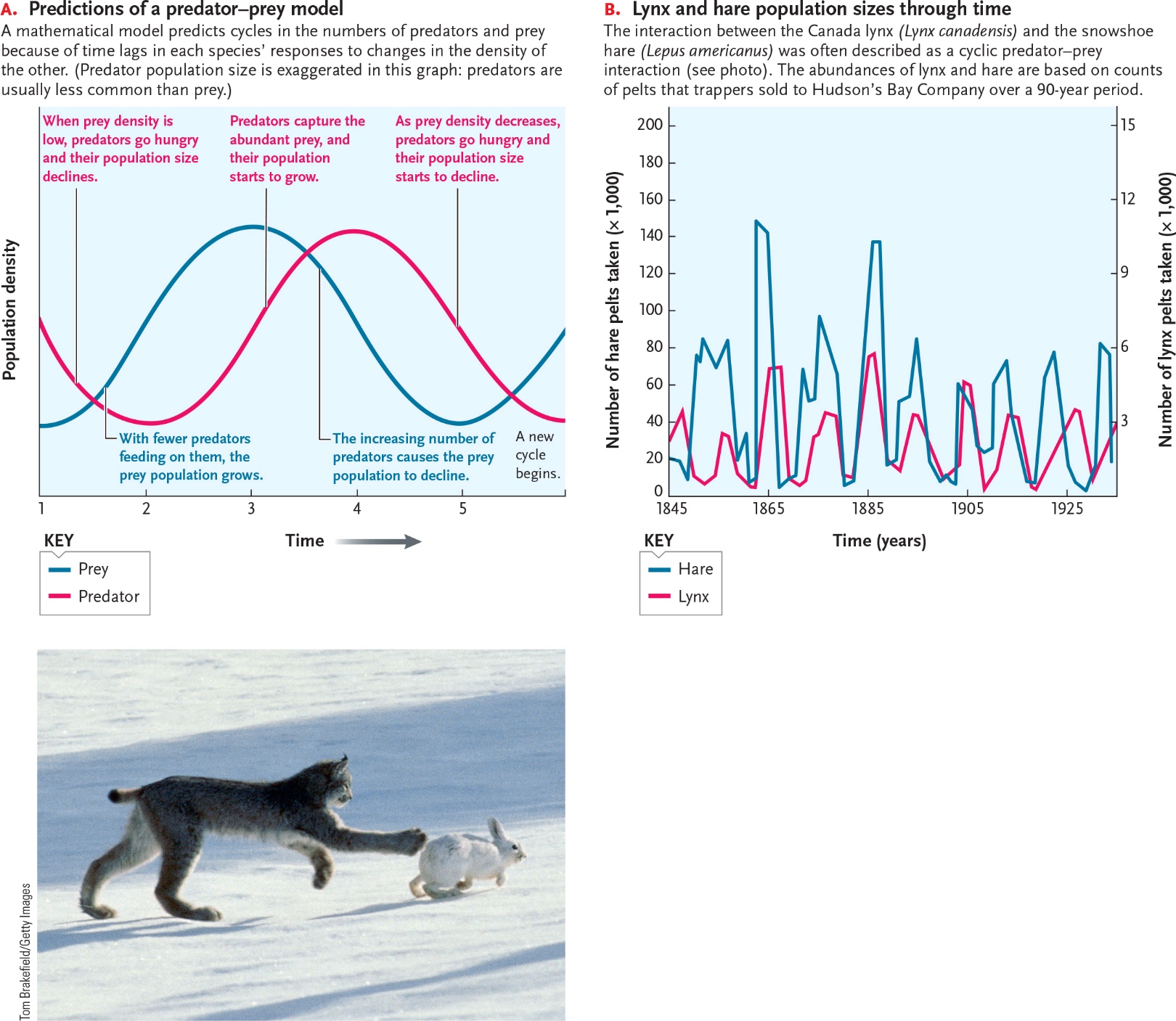
2. Environmental requisites for territoriality

3. Functions of territoriality

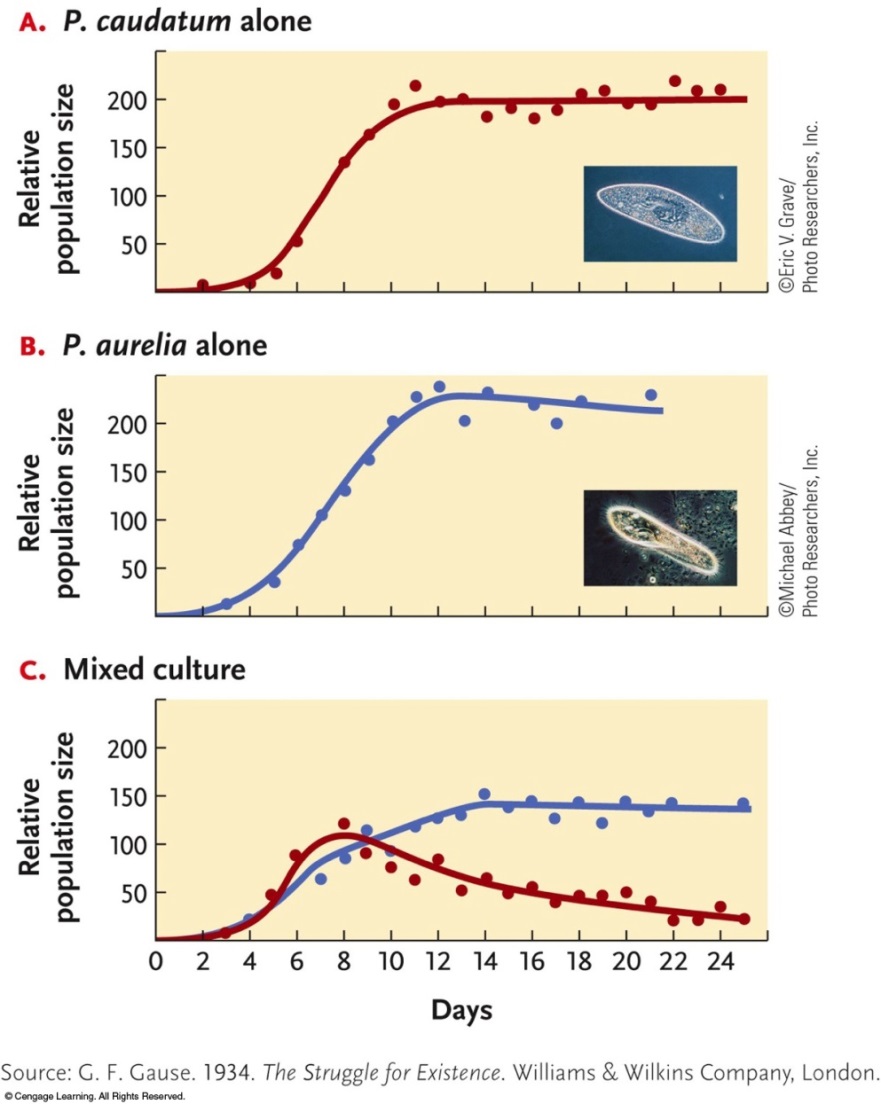
4. Consequences of territoriality

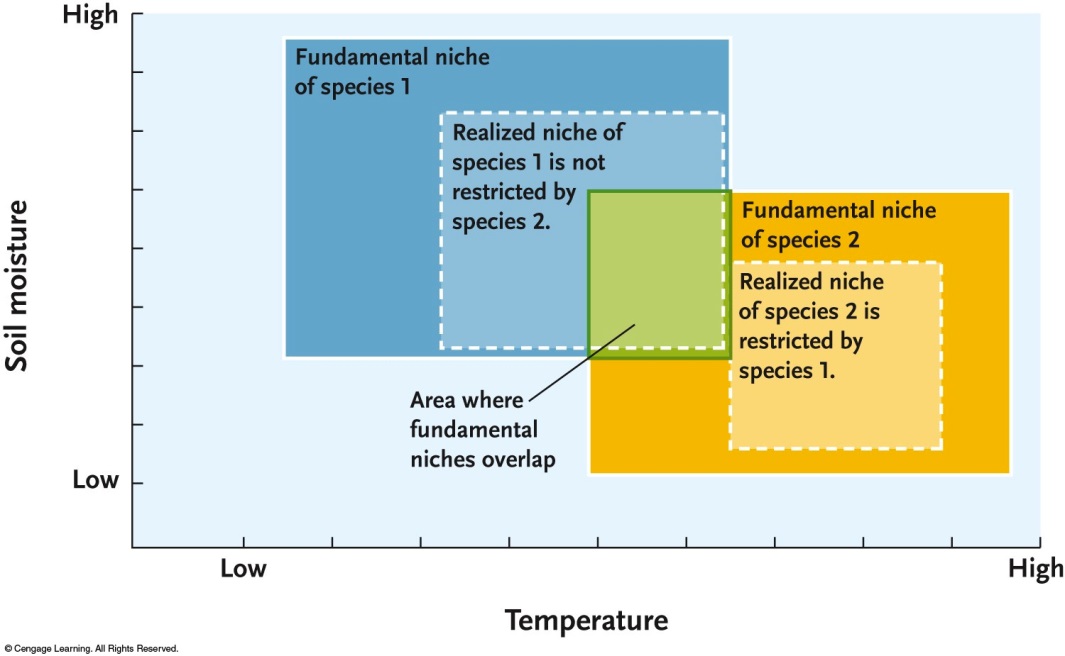
5. Seasonality of territory ownership

31-1

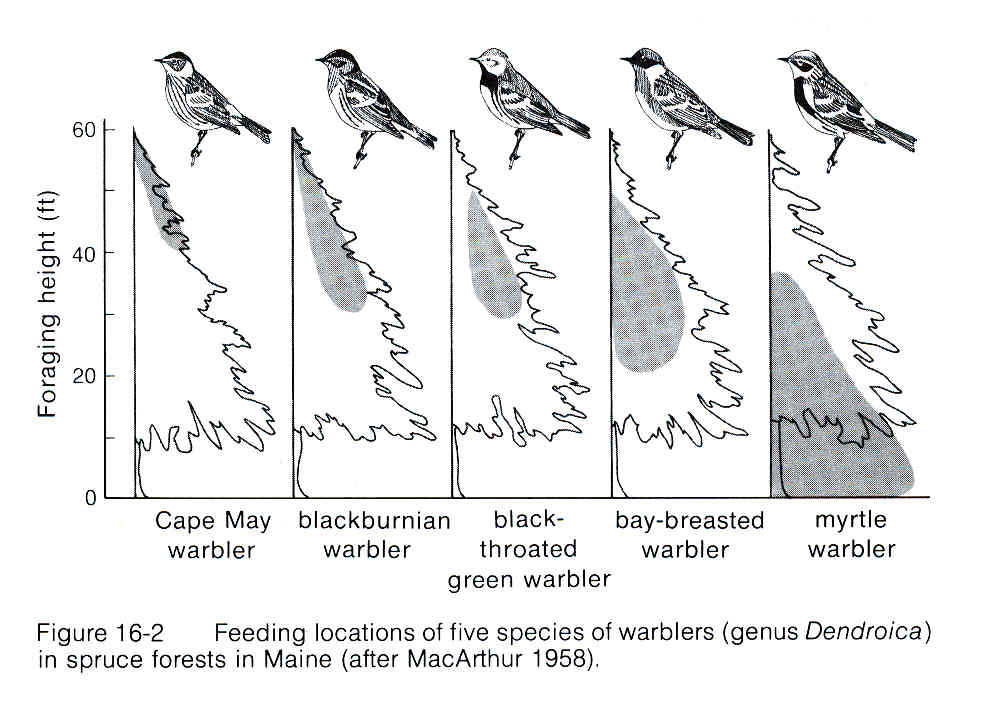


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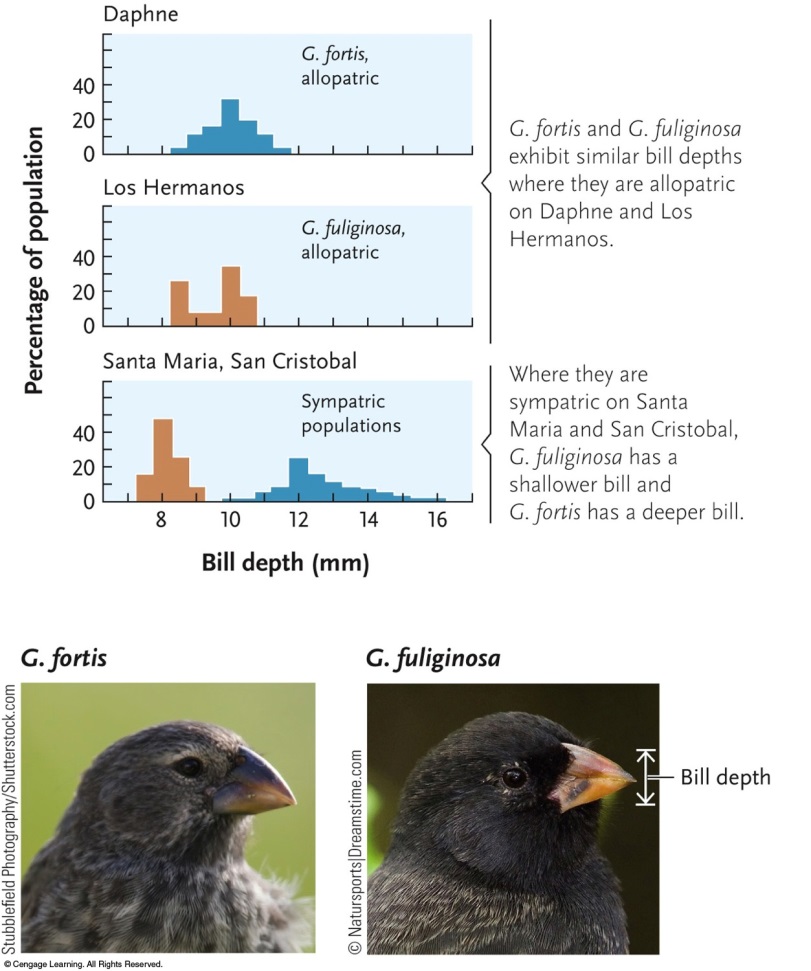




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