

Population density and biological cycles

ST

PAGES 297–302

Complete this Concept Review so you can keep a record of what you have learned.

DENSITY AND DISTRIBUTION

Definitions

- Population density refers to the number of individuals per unit of area or volume.

Mathematical formula:

$$\text{Population density} = \frac{\text{Number of individuals}}{\text{Space (area or volume) occupied}}$$

- Population distribution is the way in which individuals are dispersed within their habitat.

Patterns of distribution

Pattern of distribution	Description	Example
<i>Clumped distribution</i>	<i>Individuals form groups to provide some protection from predators and help the fish feed more efficiently.</i> <i>Most common pattern of distribution</i>	<i>Fish that move around their habitat in schools.</i>
<i>Uniform distribution</i>	<i>Individuals are dispersed equally throughout the population's habitat due to competition for natural resources.</i>	<i>Northern gannets, which space their nests at regular intervals.</i>
<i>Random distribution</i>	<i>Individuals are randomly and unpredictably dispersed across the population's habitat.</i> <i>Pattern of distribution rarely found</i>	<i>Bushes growing in a field</i>

ECOLOGICAL FACTORS

Definitions

- An ecological factor is an aspect of a habitat that can affect the organisms living there.

- Abiotic factors are ecological factors of physical or chemical origin.

- Biotic factors are ecological factors related to the actions of living organisms.

- A limiting factor is an ecological factor that causes the density of a population to decrease.

Examples of ecological factors

Abiotic factors	Biotic factors
<u>Amount of light</u>	<u>Birth rate</u>
<u>Soil or water pH</u>	<u>Disease</u>
<u>Terrain</u>	<u>Amount of food</u>
<u>Depth of snow</u>	<u>Predation</u>
<u>Temperature</u>	<u>Competition</u>
<u>Air humidity</u>	<u>Human activity</u>

BIOLOGICAL CYCLE

Definition

- The biological cycle of a population is composed of alternating periods of rise and fall in its size. These periods are of fixed duration and are repeated continually.

