

Year 10 Biology Unit One: Living Together

Okay, Chaps, Welcome to Year 10 Biology. In this unit, it's almost all about animals. We will cover:

- ☑ Definitions
- ☑ Food Chains
- ☑ Populations and How to Measure them
- ☑ The Nitrogen Cycle and maybe The Carbon Cycle
- ☑ Adaptions of Animals
- ☑ And, (If you're lucky, which you are) some revision of MRS GREN

DEFINITIONS

These words are important for this topic. So I put them in this here table. Enjoy!

Word	Definition
Producer	An organism that makes its own food.
Consumer	An organism that must find and eat it's food
Decomposer	An organism that gets its energy by breaking down dead animals and plants
Habitat	The place in which an organism lives
Environment	The set of factors that affect an organism
Population	Groups of organisms of the same species that live together
Community	All the living things (Populations of different species) that live in a specific area
Ecosystem	The physical (non-living) and biological (living) factors that make up a specific area

FOOD CHAINS, FOOD WEBS AND THE DIFFERENCE BETWEEN THEM

Food Webs are a good way of seeing what animals eat other animals or plants. Food Chains are a close-up version of that, only looking at a small part of the food chain. Firstly, we will cover food chains.

Food Chains

An example of a food chain:

Grass -----> Cows -----> Humans

A food chain is only one branch of a food web. If a food chain has two arrows or more linking to something, it becomes a food web. Anyway, we should take a closer look at food chains, using the example above. The Grass is at the beginning of the chain, as you can see. It does not consume anything, but it produces a food source for higher animals, like Cows, so we will call this a producer. The Cows are in the middle of the food chain. They consume the grass, and they also produce food. Because of this, they are called Primary Consumers. The Humans are at the end of the food chain. They consume the cows, but they do not produce anything. We call the Humans Secondary Consumers because they consume the Primary Consumers.

Food Webs

An Example of a Food Web

FOODWEB NOT AVAILABLE AT PRESENT

In this food web, Grass is the Producer, but unlike a food web, it has more than one primary consumer. The primary consumers are Rabbits, Cows and Pigs. Also, there is more than one secondary consumer in this food web.

The difference between the two

There isn't much differences between Food Webs and Food Chains. I will list the few differences here

- ☑ Food Chains are only one path of a food
- ☑ Food Webs can encompass a whole ecosystem, and are a more accurate and concise version of food webs.
- ☑ Other than that, there isn't much difference

ADAPTATIONS

Adaptions are what allow a particular organism to survive in a particular environment. Every species everywhere has at least one particular adaption

There are three main types of adaption that are covered in this unit:

☑ Structural Adaptions:

These are adaptions to an organism's structure (build). Structural adaptions are things like blubber for insulation or a protective exoskeleton

☑ Behavioural Adaptions:

These are adaptions to an organism's behaviour based on it's environment. Behavioural Adaptions might include things like laying eggs on land, living in a colony or feeding in groups.

☑ Functional Adaptions (Also called Physical Adaptions):

These are adaptions to an organism that allow it to carry out the major life functions, like Mrs Gren.

The Almighty Penguin

I decided to use a penguin as my example of Behavioural, Functional or Structural. The table lists the adaptions of a penguin

Type of Adaption	Adaptions
Behavioural	☑ Time Spent in Water: The penguin spends 75% of it's time in water
	☑ Social Habits: Penguins tend to swim and feed in groups
	☑ Nesting Habits: Emperor Penguins build no nests, they hold the eggs using their feet.
Functional	☑ Black and White Counter shading: Makes the penguin almost invisible from predators either above or below the penguin
	☑ Swimming ability: Streamlined body, paddle-like feet, insulating blubber (fat) and watertight feathers all add to the penguin's efficiency and comfort underwater.
	☑ Waterproofing: The penguin has 70 feathers per square inch, which overlap. This provides a waterproofing for the penguin so it is more streamlined
Structural	☑ Wing Structure: The penguin has wings (contrary to popular belief), which are shaped like flippers, and allow the penguin to move underwater at speeds of up to 15mph (24kph)

POPULATION STUDIES

Age Structure

There are three different types of Age Structure. They are Declining Population, Stable Population and Increasing Population. They will be covered in this table

Type of Structure	Description
Declining Population	The environmental conditions of the region could be poor, or be threatened by introduced species or Humans. Either way, the creatures do not have enough time to reproduce, so the population will decrease
Stable Population	The environmental conditions of the region are adequate to support the population, but it could not support a population growth. Existing creatures reproduce enough offspring to sustain the population before they die, meaning that their current population is sustained and has no change
Increasing Population	The environmental conditions of the region are excellent, and the population is thriving. Populations of a particular species will increase over a period of time.

Humans are an increasing population, because the environmental conditions of most regions are good enough to support an increasing population. However, due to strain on some resources, the environment may not support a population growth, or it could even become as bad as to warrant a decreasing population.

Quadrats

A species may live in one huge habitat, but it would take far too long to count every individual which lived in that habitat. It would take even longer to calculate density, etc. Instead of doing this, Scientists use Quadrats to break up the area of the habitat into smaller areas where it is far easier to count the number of individuals.

Quadrats are always the same size, and the shape of the perimeter of a quadrat must tessellate, so you can't have irregularly shaped quadrats.