



Competition

When organisms of the same or different species 'fight' for necessary resources that are in short supply.

Intra-specific competition: Between members of the same species i.e. within a species



Inter-specific competition: Between members of different species



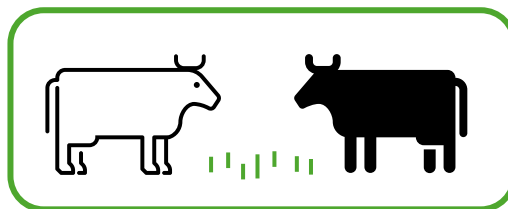


Contest Competition - involves an active physical contest between two organisms – only one wins



Scramble Competition - Each organism tries to get as much of the same resource as possible.

e.g. an ivy plant and a hawthorn tree may compete for light.





Predation

Predator - animal that hunts, captures and kills other animals (**prey**) for food.

Adaptations in prey

- Plants may have thorns, spines or stings
- Nasty taste when eaten e.g. giant hogweed
- Are slightly faster than their predator
- Staying in herds or flocks - safety in numbers
- Camouflage - greenfly, stick insects





Parasitism

A parasite in an organism that lives off another organism and often causes harm.



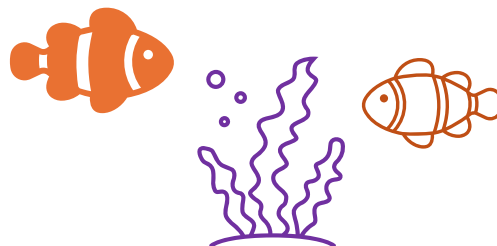
Symbiosis

This occurs when two organisms live close together and at least one of them benefit.

Nitrogen-fixing bacteria live in nodules on the roots of some plants. e.g. clover

Clownfish and sea anemones have a mutually beneficial relationship.

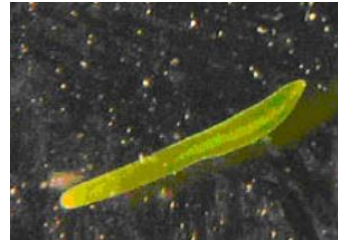
The clownfish get a protected home from the anemone and the anemone gets cleaned, protected from butterfly fish and fertilizer from the clown fish.



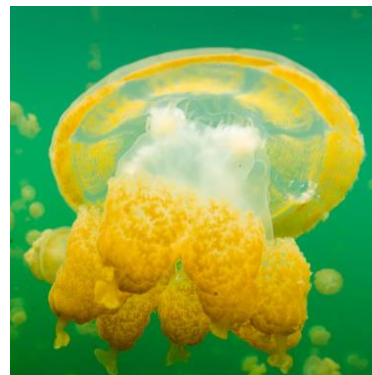


PLANT OR ANIMAL? – Not on course...

One of the strangest cases of symbiosis is that of the **Acoel flatworm**. The worms are transparent, but within them live algae, which contain chlorophyll and capable of photosynthesis. They give the worms a green colour. The algae absorb sunlight through the worms' clear skin and photosynthesise food. The worms have no functioning digestive tract or working mouths. The algae even recycle the worms waste products and go through entire life cycles inside the worms' bodies.



We also find '**The Golden Jellyfish**' that never eat, as they too have algae-like organism in them that captures sunlight to make glucose for the Jellyfish.





Population Dynamics

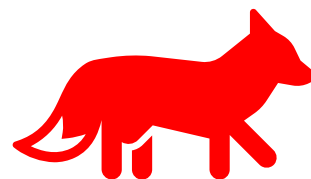
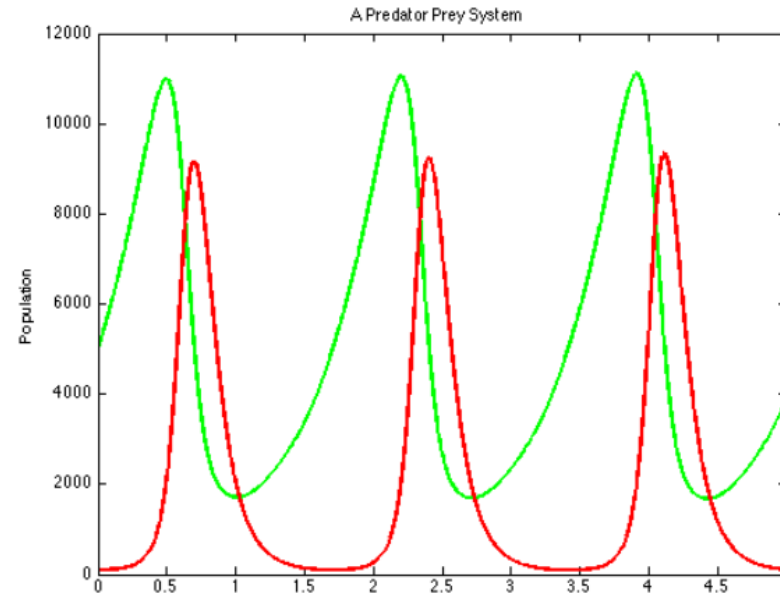
Predator and Prey numbers are linked.

An example is Foxes and Rabbits.

The green is **Rabbits** and red are **Foxes**.

As the number of rabbits goes up so does the number of Foxes.

The foxes eat too many rabbits, their numbers drop and so foxes die of starvation.





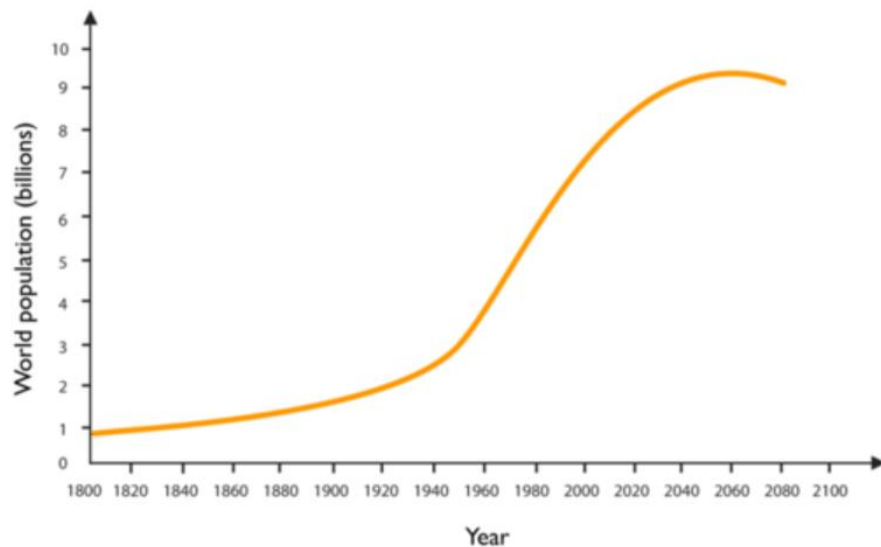
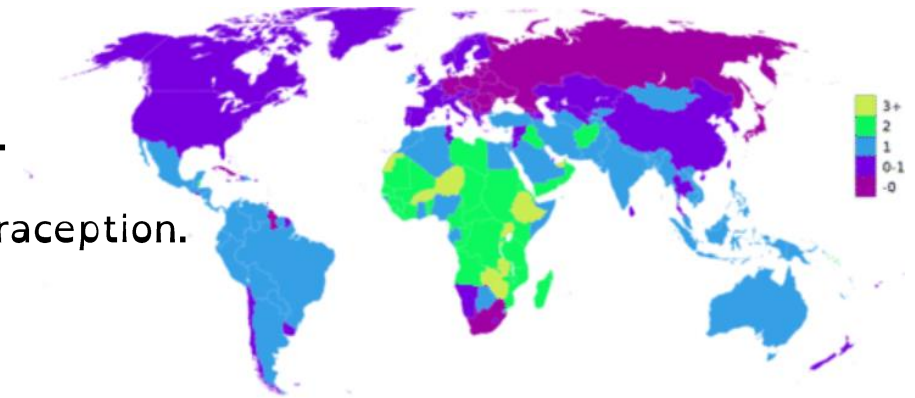
Human Population Growth

Has continued to rise since the early 1900's. This is due to the falling death rates.

People are living longer because of disease control methods and medicine. Factors that reduce a population are war, famine and poverty.

Less people are born due to wealth and contraception.

More people are born due to poverty and lack of contraception.



The world population is still increasing but it is increasing most in Asia and Africa. In the next 25 years we will see trade markets move from Europe and North America to Africa. Eventually by 2100 the population will start to drop worldwide.





Questions on this topic

Q.1 What is a predator?

Q.2 Give an example of contest competition?

Q.3 What is symbiosis? Give an example.

Q.4 Give 3 reasons for human population decline?

Q.5 Give 3 adaptations of prey to avoid predation.

