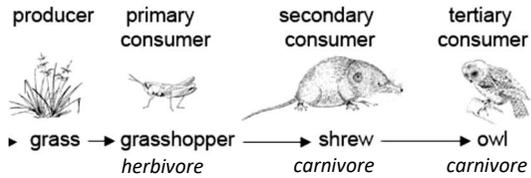


Knowledge organiser – 9.1 Interdependence

FOOD CHAINS

- The arrows show the transfer of energy (stored in food) from one organism to the next.
- Some energy is transferred to the surroundings by heating and as waste; this means that at each level less energy is being transferred to the next organism.
- The top predator is always the last link in the food chain.



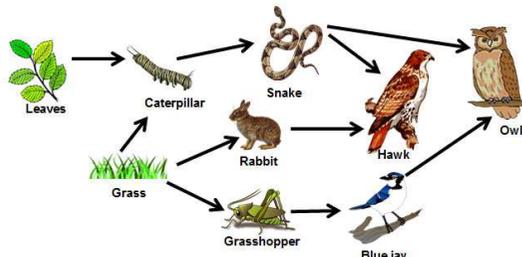
FOOD WEBS AND INTERDEPENDENCE

A food web is a set of linked food chains.

Organisms in a food chain depend on each other for survival (interdependent).

Populations of organisms are constantly changing. The size of a population is affected by:

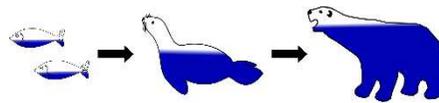
- Number of predators and prey
- Disease
- Pollution
- Competition



Some organisms, like the rabbit, have just one predator (hawk). If the number of rabbits decrease, due to a disease, the number of hawks would also decrease as they would have less to eat.

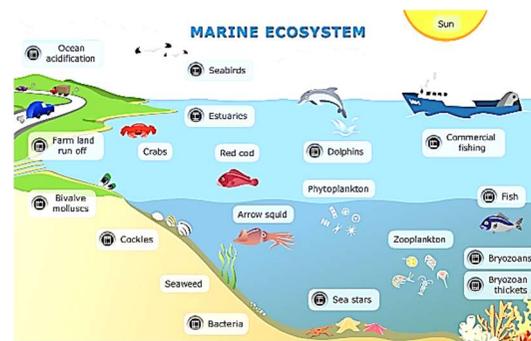
Decomposers (bacteria and fungi) are also found in food webs.

BIOACCUMULATION



Chemicals (e.g. insecticides) can also be passed along a food chain!

- As these chemicals are washed into rivers and end up in the sea, they are absorbed by fish in small amounts.
- Seals eat the fish and the chemicals pass into their body.
- The levels of the chemical build-up (accumulate) in seals as they eat lots of fish.
- Polar bears eat seals, as one polar bear eats lots of seals, the chemical accumulates to a dangerous level. This makes the polar bear ill and can cause death.



Habitat → ocean
Community → water plants, micro-organisms, insects, fish, fish-eating birds, sea mammals, crustaceans.

The plants and animals co-exist. They live in the same place at the same time.

Dolphins and crabs live in the ocean but do not compete for food. They have **similar but slightly different niches**.

COMPETITION

Animals compete for:

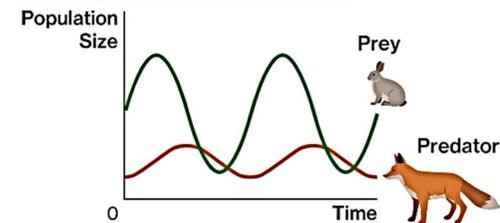
- Food
- Water
- Space (hunt/shelter)
- Mates (to reproduce)

The best competitors will be fast, strong and quick to spot their prey.

Plants compete for:

- Light
- Water
- Space
- Minerals

PREDATOR-PREY RELATIONSHIPS



Changes in population of one animal can directly affect the population of another.

- When the prey population increases, the predators have more to eat. The number of predators increases, as they survive longer and reproduce more.
- The growing predator population eats more prey. Their number of prey fall.
- There is not enough food for all the predators so their numbers decrease.
- As there are fewer predators feeding on prey, the prey population will increase.
- The cycle starts again.

<u>KEYWORD</u>	<u>DEFINITION</u>
Bioaccumulation	The build-up of toxic chemicals inside organisms in a food chain.
Carnivore	A consumer (animal) that eats other animals.
Community	The collection of the different types of organisms present in an ecosystem.
Competition	Competing with other organisms for resources.
Consumer	Animal that eats other animals or plants.
Decomposer	Organism that breaks down dead plants and animal material so nutrients can be recycled back to the soil or water.
Ecosystem	The living things (plants and animals) in a given area and their non-living environment.
Environment	The surrounding air, water and soil where an organism lives.
Food chain	Part of a food web, starting with producer and ending with top predator. This diagram shows the transfer of energy between organisms.
Food web	A diagram that shows how food chains in an ecosystem are linked.
Habitat	The area in which an organism lives.
Herbivore	A consumer (animal) that eats plants.
Interdependence	The way in which living organisms depend on each other to survive, grow and reproduce.
Niche	A particular place or role that an organism has in an ecosystem.
Omnivore	A consumer (animal) that eats plants and animals.
Population	Group of the same species living in an area.
Predator	An animal that eats other animals.
Prey	An animal that is eaten by another animal.
Producer	Green plant or algae that makes its own food using sunlight by the process of photosynthesis.