

Dynamic ecosystems

Other factors that effect Ecosystems

Ecological Niches

- Habitat- environment an organism lives including abiotic and biotic factors

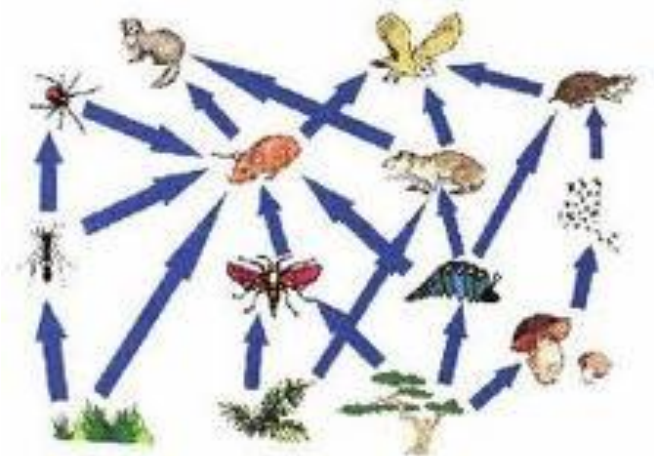
(Biozone p 237)

- Niche is the functional position of a species in an ecosystem i.e. how it responds to the resources available and how it alters it for other species.

(Biozone p238 and page241)

CHANGING FOOD WEBS

- Some food webs can change for short periods e.g. when there is a shortage of rain ,a river bed may dry up but the plant and animal life will survive.
- When conditions are changed permanently, some animals can be lost forever. They are said to be extinct.
- Some animals adapt to their environments,.e.g. worms like dark damp conditions. Try to think of other examples.
- Food webs can be changed in several ways.



REASONS FOR CHANGE



PREDATION - Predators that eat smaller animals mean that these smaller animals breed more quickly.

DISEASE - Disease in an area can mean that the lack of one type of animal can affect other types.

NATURAL DISASTER – Fires, Tsunamis and Earthquakes can dramatically change abiotic and biotic components of ecosystems

COMPETITION -The introduction of one type of animal can compete with the population of another type. The red squirrel population in Britain has went down due to the introduction of the grey squirrel.





REASONS FOR CHANGE



HUMAN INTERVENTION

- The activities of human beings affects food webs, e.g. cutting down forests can affect the animal population in these forests.
- The activities of humans can also affect marine life, e.g. fish farming in Scotland has affected the populations of sea animals.
- Human-made disasters like oil pollution, radiation, industrial waste can affect food webs.



Competition

Species Interaction

- No organism exists in isolation.
- They may involve occasional or indirect contact e.g. predation or competition.
- Or close association symbiosis

Symbiosis

- is the close and often long-term interactions between different biological organisms
- This term encompasses a variety of interactions involving close species contact:
 - Parasitism e.g. tapeworm
 - Mutualism e.g. lichen
 - Commensalism e.g. Crustaceans living in sea anemones

Biozone p 328 Species Interaction

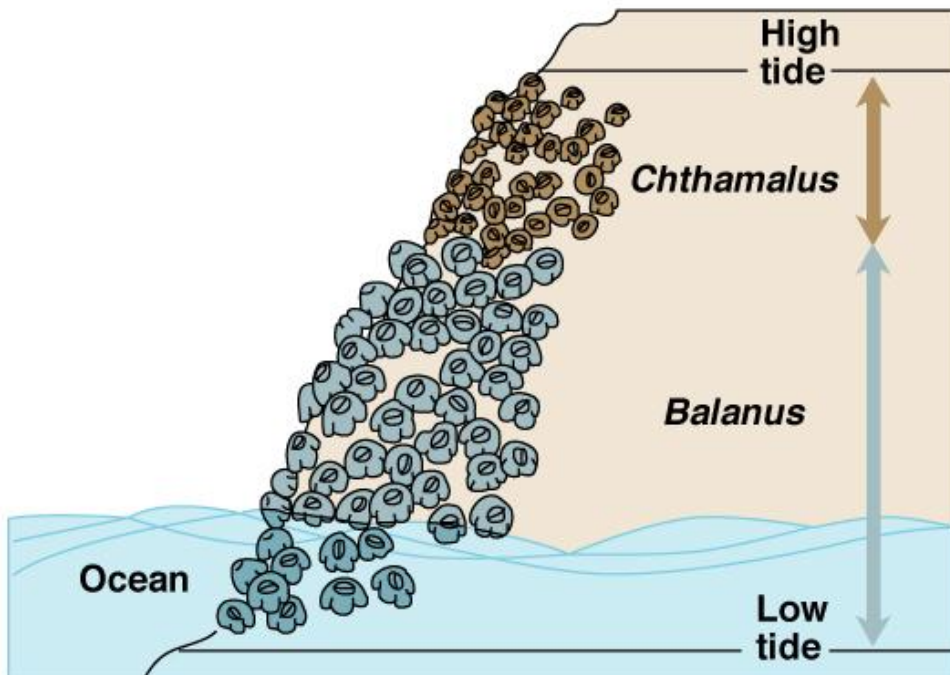


Interspecific Competition

- Competition between different species.
- This type of competition is often less intense because different species have evolved slightly different niches, though they may overlap e.g. Barnacles species
- (Read Ch 20.4 Heinemann)

Interspecific Competition - Barnacles

- when 2 species do have similar niches one usually benefits at the expense of the other which is excluded.



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Chthamalus Barnacle
restricted to Splash zone as
outcompeted by *Balanus*



Balanus barnacle
restricted to deeper
waters

Interspecific Competition- Gambusia

- In Australia the introduction of many foreign (usually more aggressive species) has led to decline of native species
 - Mosquito fish introduced to Australia earlier this century as an aquarium fish and an example of biological control.
 - Found in water that is not fast flowing.
 - It has displaced other fish and frog from their habitats
- (Biozone Page 330 Interspecific Competition.)



Gambusia species

Intraspecific Competition

- Competition between the same species
- **Carrying capacity** is defined as the number of individuals in a population that the environment can support.



Territorialism behaviour is an adaptation for this type of competition

- Intraspecific competition increases with population size.
- When the demand for resources exceeds supply, the resource becomes a limiting factor.
- Populations respond by reducing population size this varies in organisms.

(Biozone P.334 Intraspecific Competition)

Predator-prey Interactions



- Most predators have more than one prey species, although one may be preferred.
- When one prey species becomes scarce this will put pressure on other prey species, so proportion of prey species changes in their diet.
- This often does not have a major effect on prey populations but can be a limiting factor for predator populations.
- Many adaptation in both predator and prey populations to limit this

Biozone Page 335 Predator Prey Interactions

Biozone Page 336 Predator-Prey Strategies