Unit 3: A Level Biology

Extinction and Conservation

Extinction is the total loss of a species.

Endangered species are at risk of becoming extinct because there are few breeding pairs left.

Reasons for extinction:

- Natural selection.
- Habitat destruction, e.g. by deforestation.
- Pollution, e.g. PCBs used as antifouling agents, can cause female dog whelks to grow false penises and thus become infertile.
- Hunting and collecting, e.g. rhino horn and pangolin scales.
- Competition from domestic animals.

Conservation methods require careful monitoring

Biological monitoring may involve field techniques like random sampling and transects.

Monitoring enables prediction of possible effects of human activities to inform planning of conservation methods.

Alternative methods can be considered and implemented if necessary to reduce harmful effects.

Political decision making should be based on sound scientific principles to make informed choices.

Conservation is the planned management of ecosystems to enhance biodiversity and protect gene pools.

Conservation methods include:

Nature reserves and SSSIs (sites of special scientific interest) are protected by law.

Trade in endangered species and products derived from them, like skins and ivory, are restricted or banned. This is an international agreement.

Captive breeding programmes in zoos and botanic gardens enhance species numbers.

Sperm and seed banks preserve gene pools for the future.

Reintroduction programmes, e.g. the beaver and red kite, enhance the numbers of endangered species.

Conflict – there is conflict between the need for conservation of species and the demand for increased food production.

Agricultural exploitation describes the need to increase efficiency and intensity of food production to meet increasing demands by a rapidly increasing human population.

Agricultural exploitation can involve:

Removal of hedgerows – destroying habitats.

Monocultures – reducing available niches.

Using insecticides, herbicides and fertilisers causing death of beneficial insects, niches and habitats and causes eutrophication.

Ecosystem destruction to provide additional agricultural land.

Conserving gene pools by conserving species is important because:

Plants may provide new medicines for the future.

Many crop plants have wild relatives that may have useful genes that could be bred back into crops to increase productivity.

It is unethical to drive species to extinction and reduce biodiversity and the long-term impacts are poorly understood.

Reduced gene pools make species more vulnerable to extinction as there is less variation.