

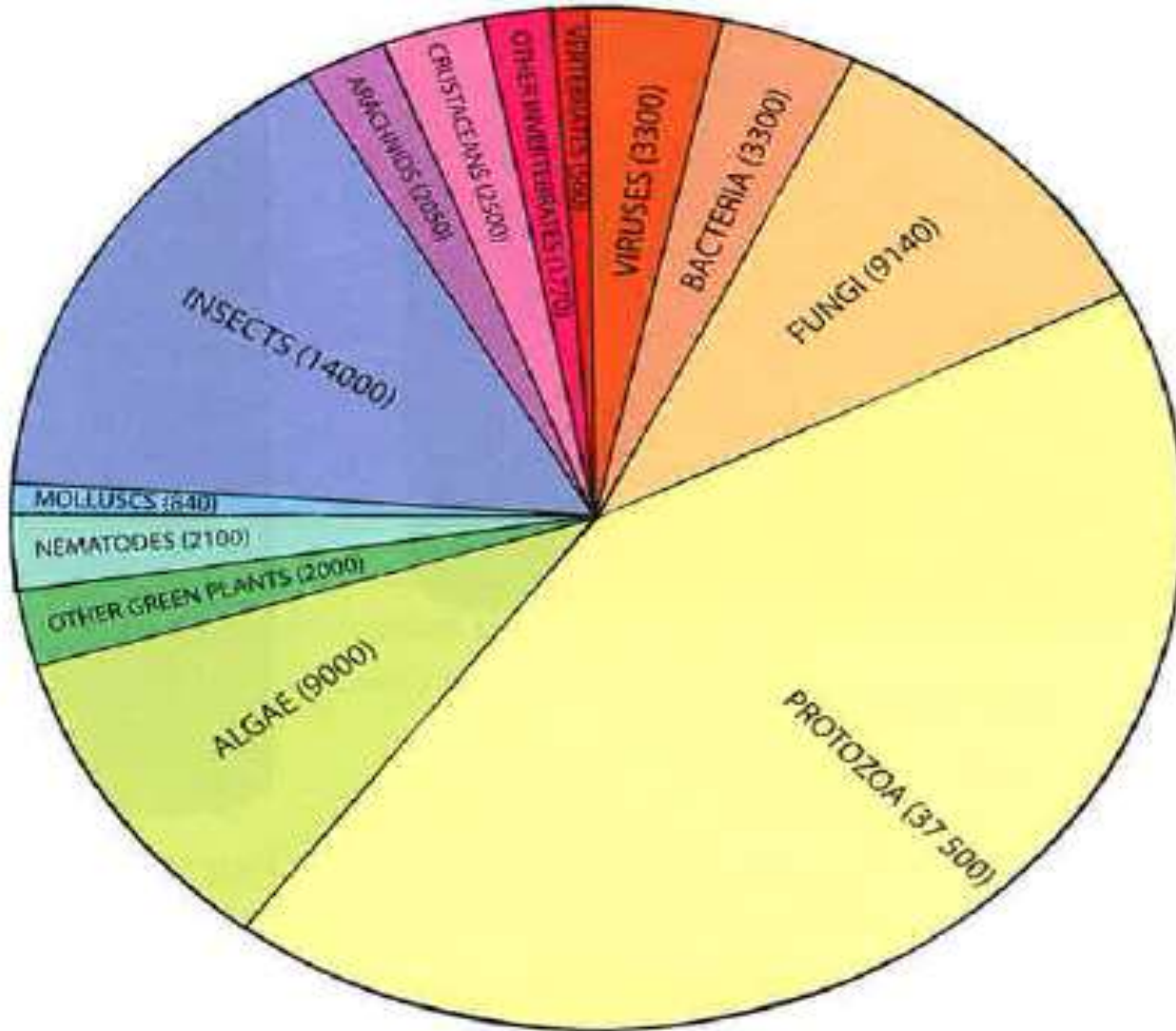
BIODIVERSITY AND THE DISTRIBUTION OF LIFE

Life on Earth National 5 Biology
Factors affecting biodiversity in an
ecosystem

BIODIVERSITY

- Biodiversity is the total variation that exists among all living things on Earth.
- Biodiversity within an ecosystem refers to the range of species within that ecosystem's community.

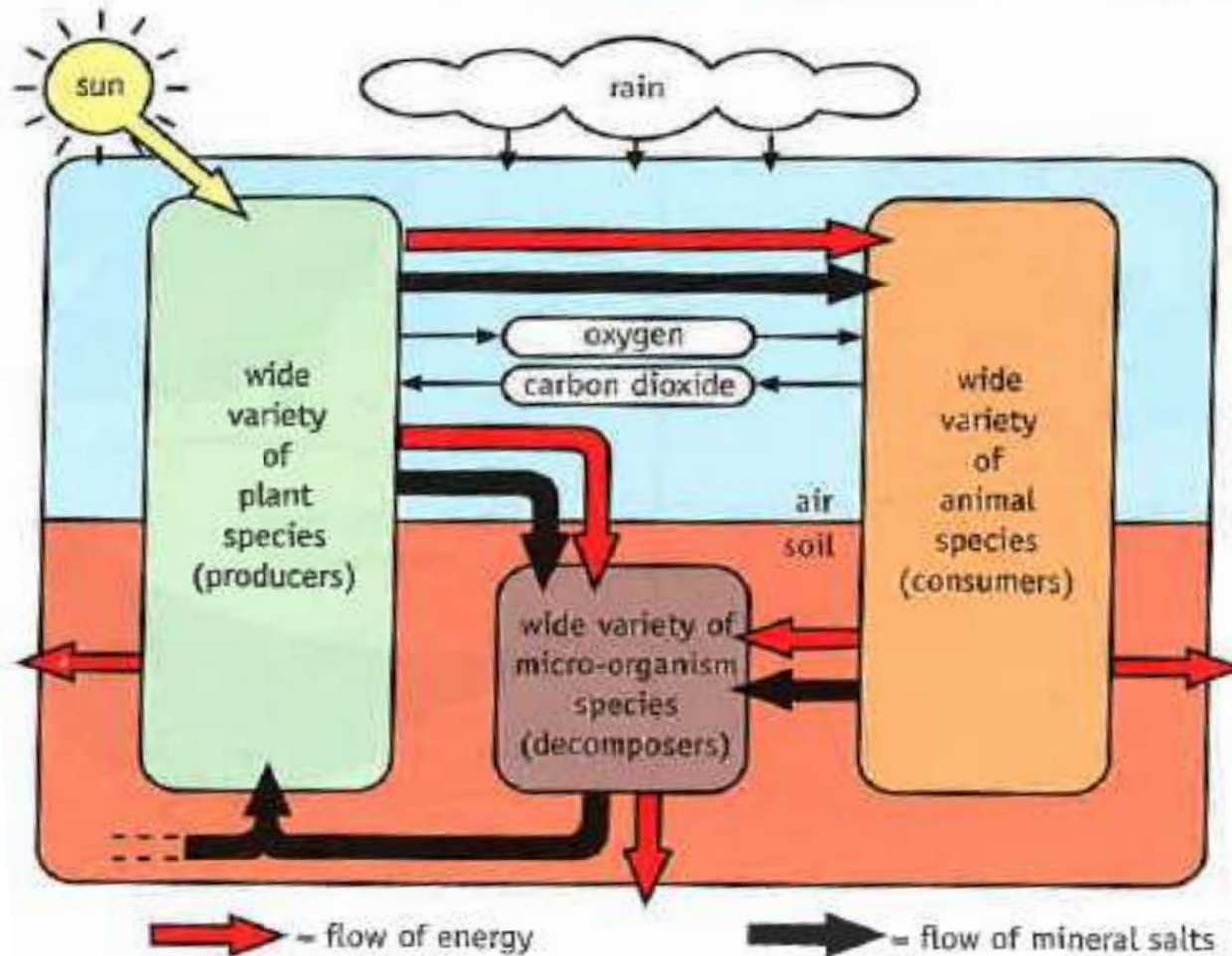
SCOTTISH BIODIVERSITY



STABLE ECOSYSTEM

- ◉ A stable ecosystem contains a wide range of producers, consumers and decomposers that are interdependent.
- ◉ Animals and microbes depend on plants for food and oxygen.
- ◉ Plants depend on microbes to recycle nutrients.
- ◉ Plants rely on animals for seed dispersal and pollination.

STABLE ECOSYSTEM



FACTORS AFFECTING BIODIVERSITY

Biodiversity can be affected by:

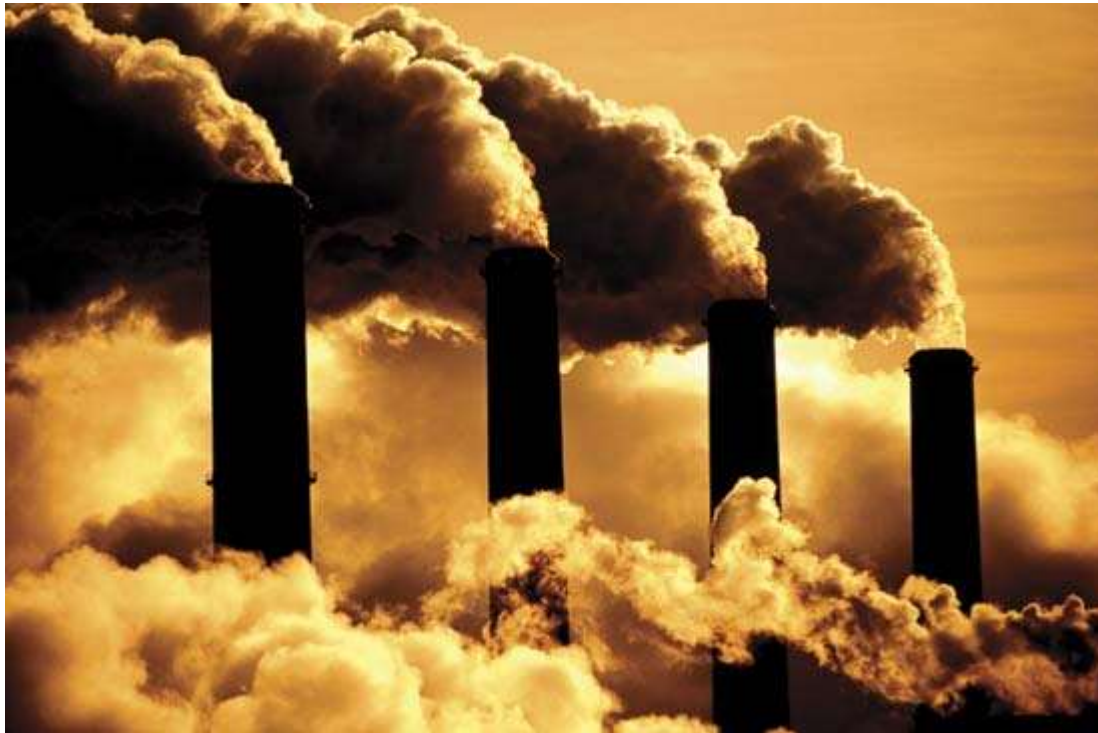
- ⦿ Human influences such as pollution and habitat destruction.
- ⦿ Abiotic factors such as pH and temperature.
- ⦿ Biotic factors such as grazing and predation.

HUMAN INFLUENCES ON BIODIVERSITY

- Human activities can often reduce biodiversity within an ecosystem.
- Our activities often result in pollution or habitat destruction.

POLLUTION

- ◉ ***Sulphur dioxide*** is a gas released during the burning of fossil fuels.



SULPHUR DIOXIDE AND ASTHMA

- Studies have shown that sulphur dioxide causes tightness of the chest in asthmatics and generally increases asthma symptoms.



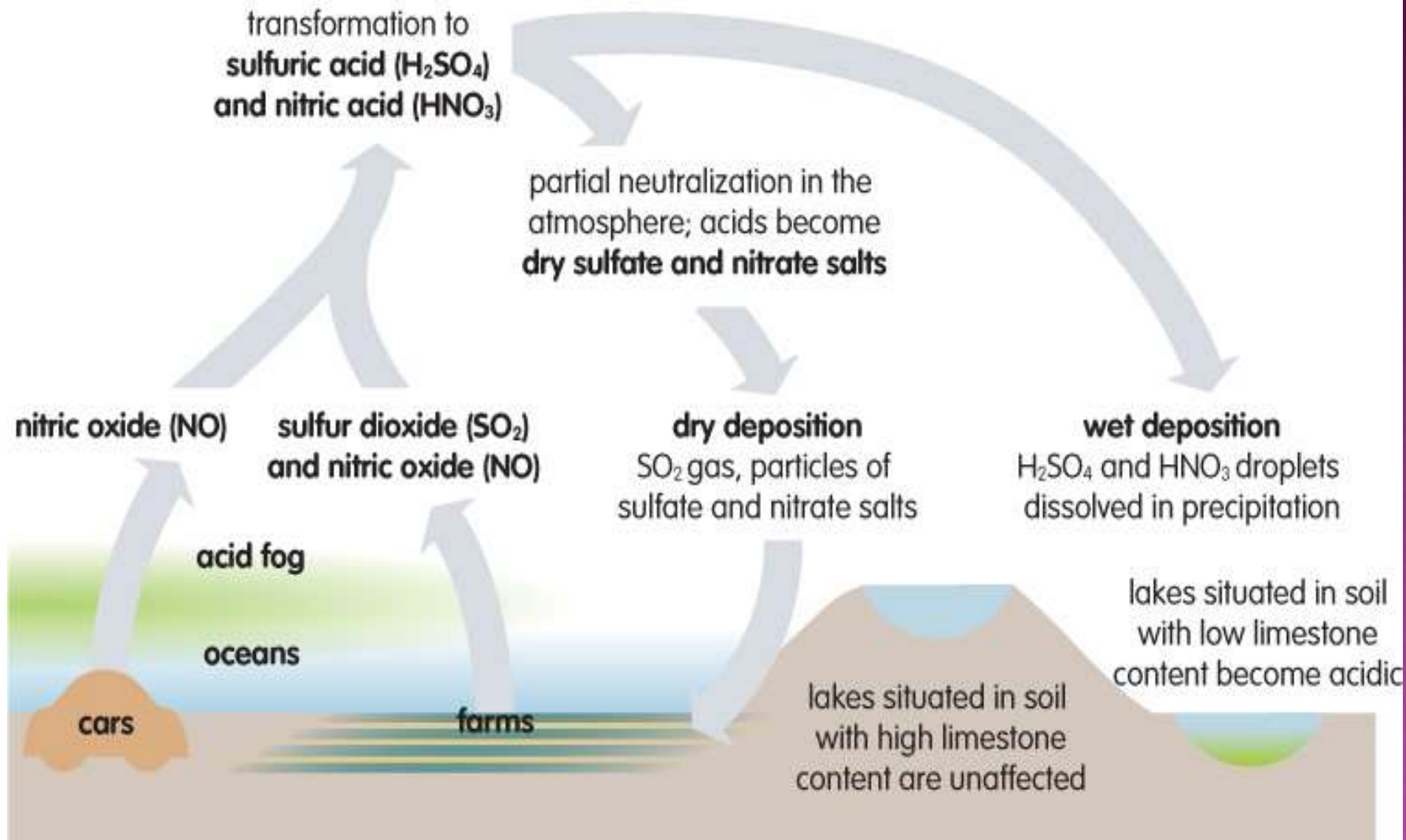
SULPHUR DIOXIDE AND PLANTS

- ◉ Leaves are damaged and bleached.
- ◉ Photosynthesis can be affected.



SULPHUR DIOXIDE AND ACID RAIN

- Sulphur dioxide reacts with water droplets in the atmosphere to form sulphuric acid and therefore acid rain.
- This acid rain acidifies lochs and rivers making it difficult for life to survive in these acidic conditions.



SEWAGE

- When sewage works become overloaded the effluent discharged provides food for bacteria.
- The bacteria multiply and use up the dissolved oxygen in the water.
- David Walliams & raw sewage in the Thames



THERMAL POLLUTION



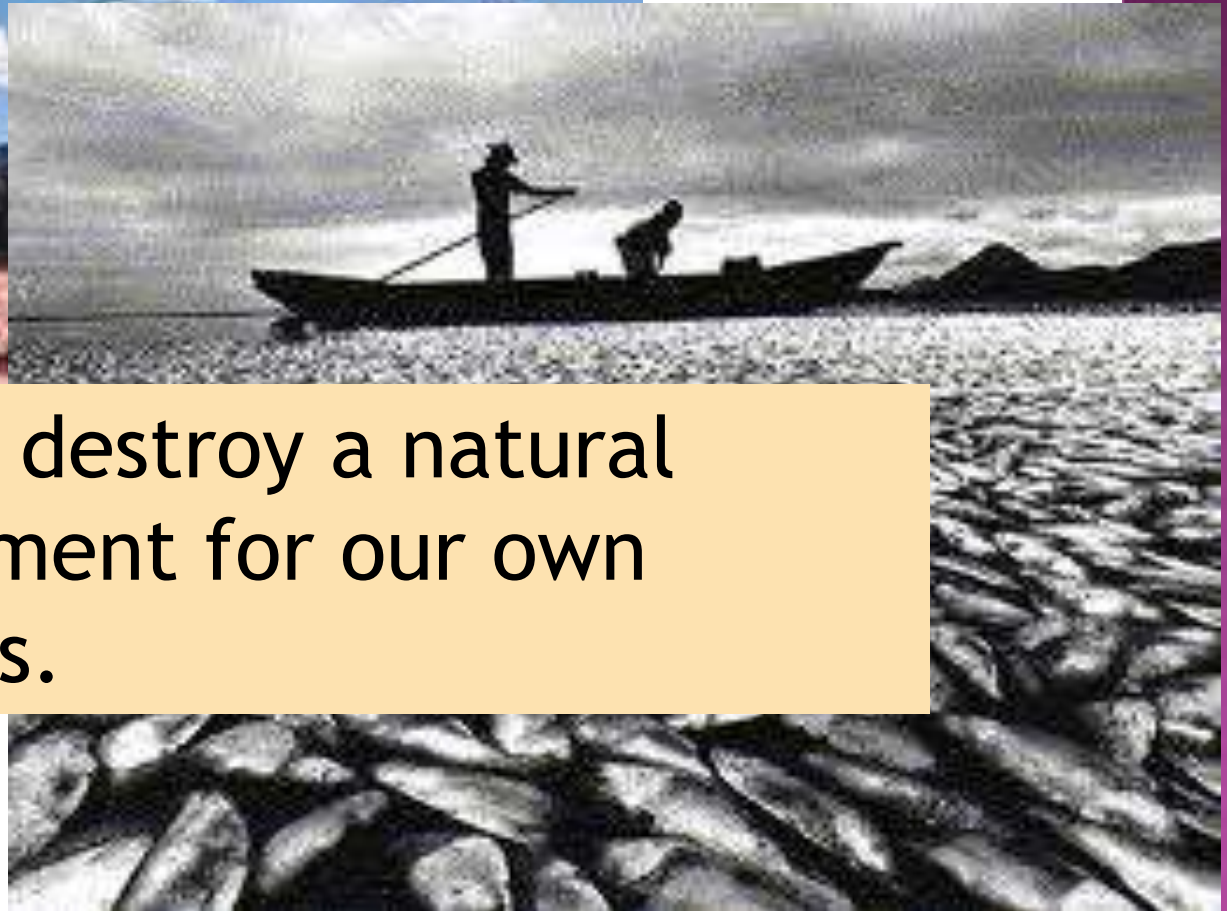
SOURCES OF THERMAL POLLUTION

- ◉ Some types of power stations use river or sea water as a coolant e.g. Hunterston B Nuclear Power Station

Hunterston B clip (<2mins)

- ◉ Water returned is warmer than it would normally be.
- ◉ This reduces the oxygen dissolved in the water - reducing biodiversity.
- ◉ Warmer temperatures may suit some species more than others, thus affecting marine ecology.

HABITAT DESTRUCTION



Humans destroy a natural environment for our own purposes.

DEFORESTATION

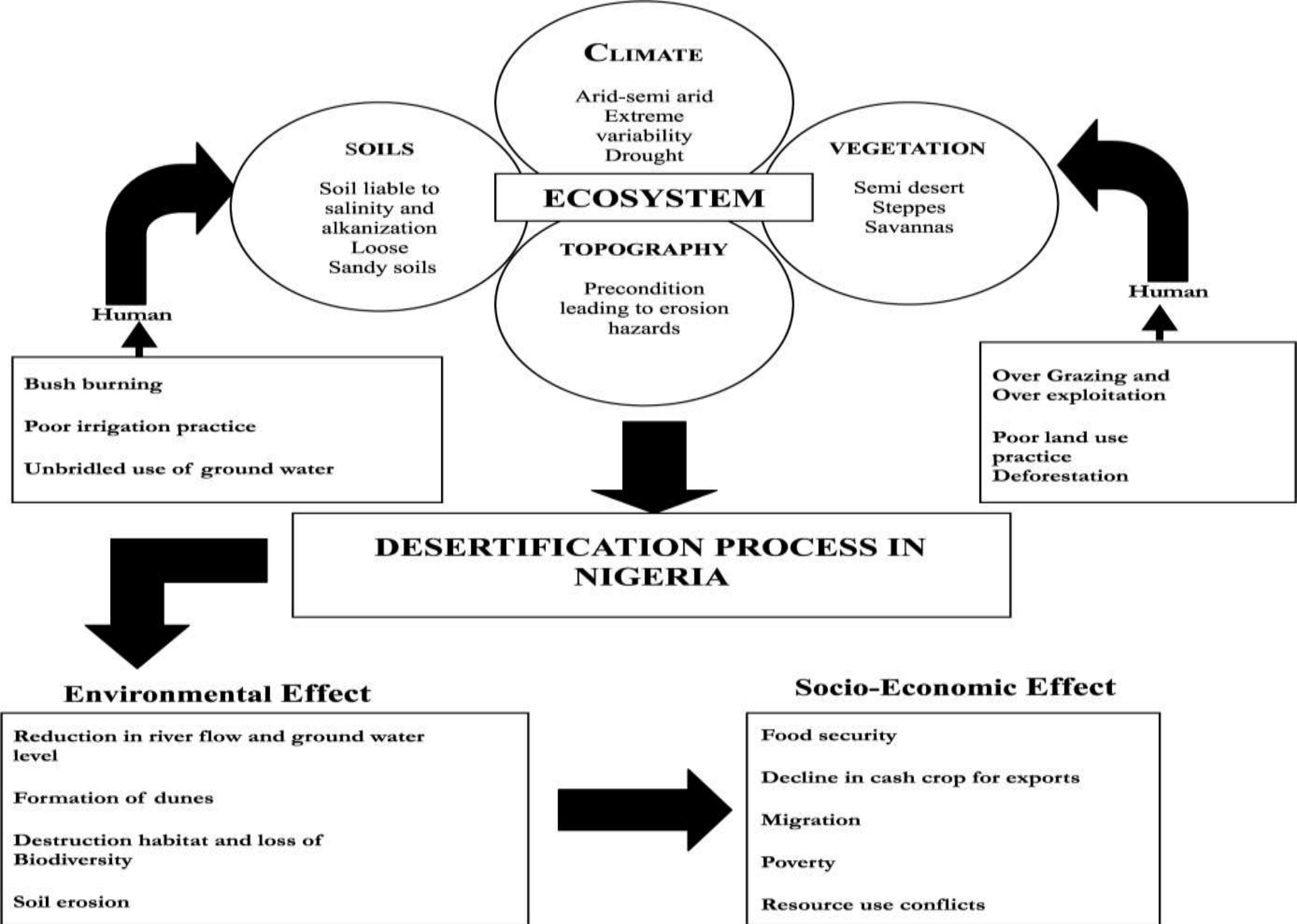
- ◉ When natural forest is cleared for homes, grazing, and agriculture, the land is planted in crops and pasture.
- ◉ This process releases carbon dioxide, reduced rainfall, and contributes to global warming and atmospheric pollution.
- ◉ Can the consequences above occur?
- ◉ Deforestation in the Amazon
- ◉ NASA Devastating Deforestation Time-lapse



DESERTIFICATION

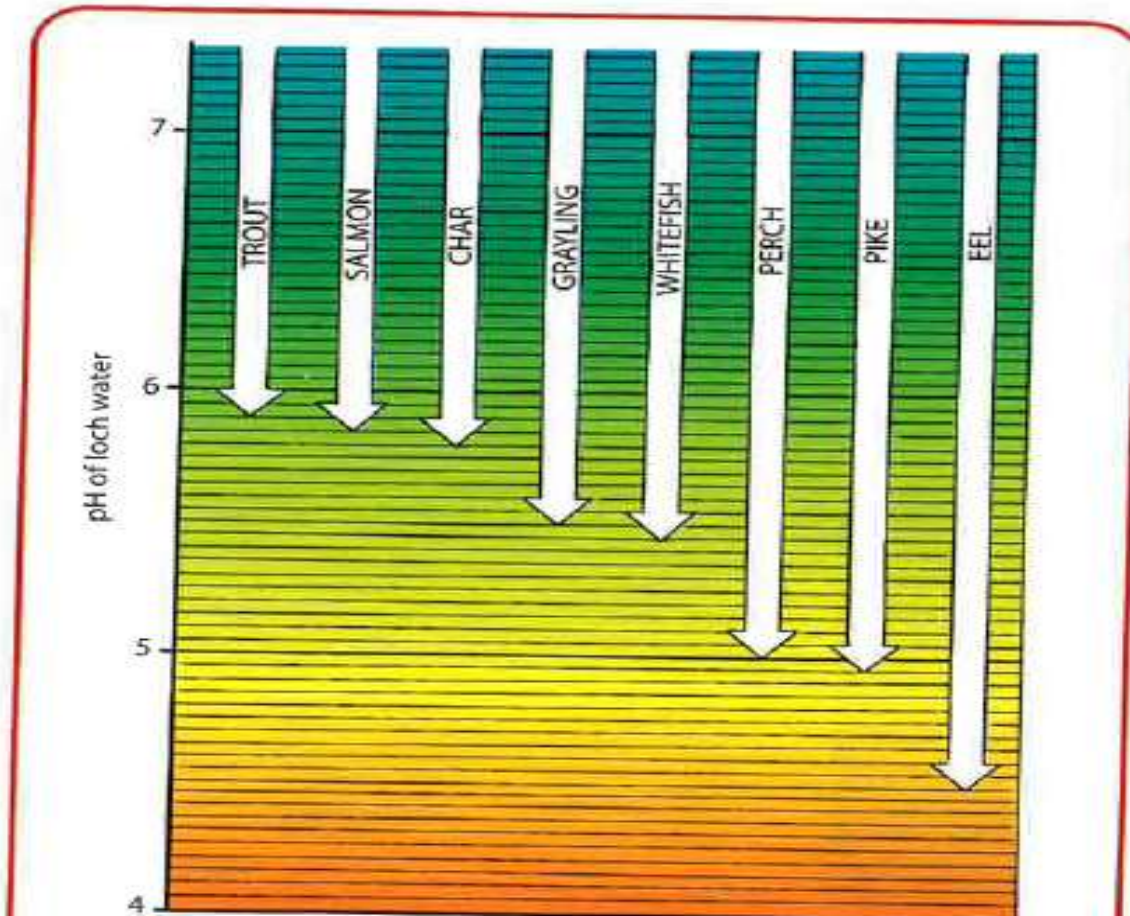
Impact of desertification on farmers

- ⦿ The area of land covered by desert increases.
- ⦿ This reduces agricultural land and water supplies.
- ⦿ Caused by deforestation and inappropriate farming procedures.



Source: Adapted from Medugu (2007)

THE EFFECT OF ABIOTIC FACTORS ON BIODIVERSITY



What is the relationship between pH and the number of fish species?

TEMPERATURE

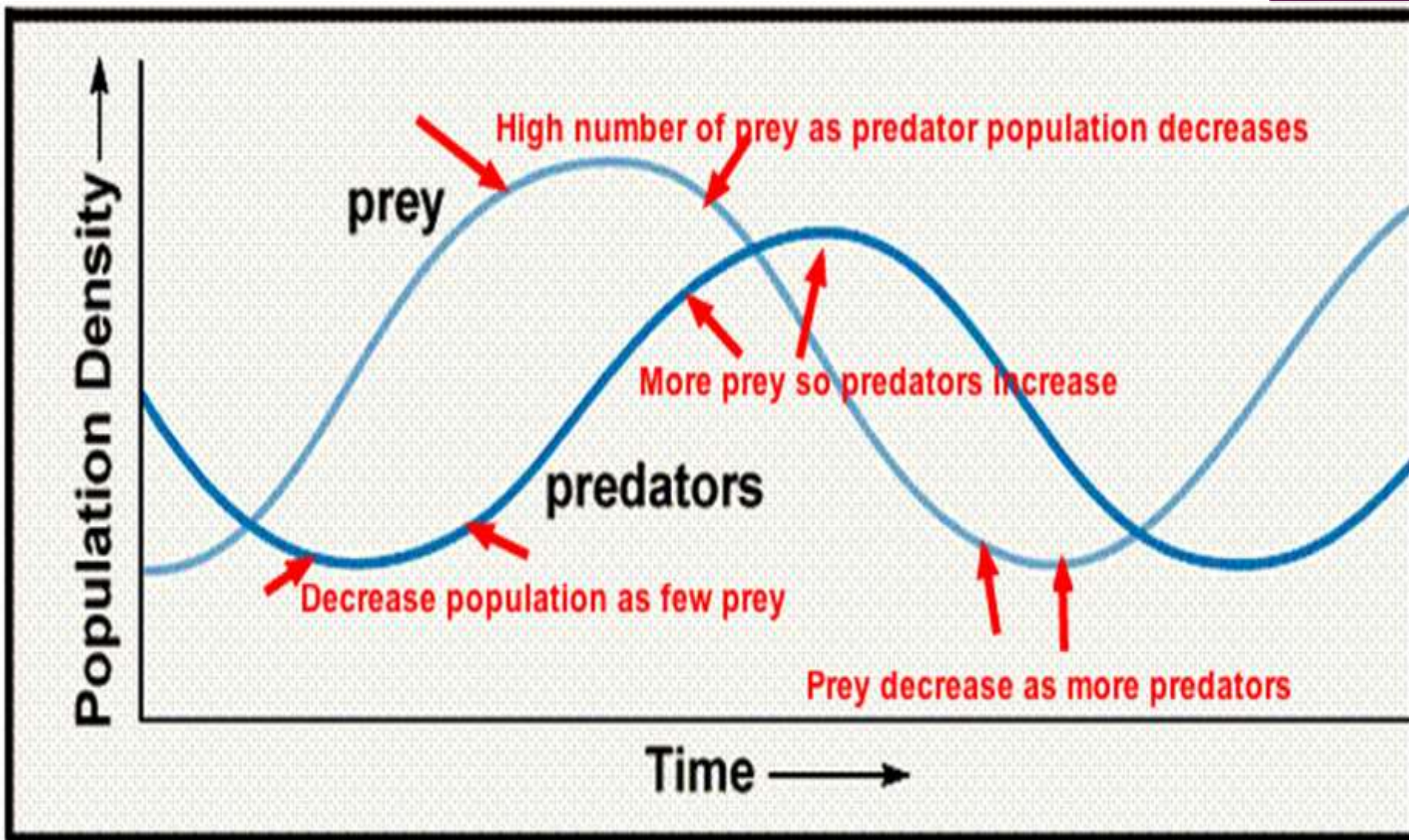
- ◉ Increasing the temperature of the water decreases the concentration of oxygen dissolved in it.
- ◉ What effect will a decrease in oxygen have on the number of species able to survive in this water?
- ◉ Oxygen levels and fish death
- ◉ Oxygen levels and fish size

THE EFFECT OF BIOTIC FACTORS ON BIODIVERSITY - GRAZING

- ◉ Effects of grazing in the Himalayas
- ◉ At low levels of grazing a small number of fast growing species will out compete less vigorous species and dominate.
- ◉ High levels of grazing increase biodiversity by keeping the fast growing species in check.
- ◉ Overgrazing will decrease biodiversity by damaging all the plant species present.

PREDATORS AND PREY

- As the prey population in an ecosystem increases the predator population increases due to an increased supply of food.
- Growing predator numbers will eventually cause a decrease in the prey population. This means a decrease in food supply for the predator and eventually a decrease in numbers.
- This allows prey numbers to recover and so on.



WEBSITES

- ◉ <http://www.barnowltrust.org.uk/>
- ◉ <http://kidwings.com>