

1. Measuring Biodiversity

3 measurable components to biodiversity (GES)

Biodiversity Component	Definition	How it effects Biodiversity
1.Genetic diversity	Number and frequency of alleles within a population	1. Inbreeding depression lowers reproductive success 2. Less adaptable to changing environment
2.Ecosystem diversity	Number of distinct ecosystems within a defined area.	
3. Species diversity	1. Species Richness Number of different species in an ecosystem 2.Relative abundance Number of each species in the ecosystem	A community with a dominant species has a lower species diversity

Species Richness & Abundance

Name of Species	Percentage of each species
Daisies	5
Grass	81
Buttercups	4
Clover	6
Dandelions	4

Lower species diversity (dominant species)
 Lower relative abundance of others
 Species richness unaffected

Name of Species	Percentage of each species
Daisies	5
Grass	81
Buttercups	0
Clover	10
Dandelions	4

Lower species diversity (dominant species)
 Lower relative abundance of others
 Species richness lower (no buttercups)

2. Threats to Biodiversity

threats to Biodiversity

1. Over Exploitation
 2. Bottleneck effect
 3. Habitat fragmentation
 4. Invasive Species
- (lowers genetic & species diversity)
- } Lowers genetic diversity

Over Exploitation

Populations can be reduced to a low level through over exploitation activities such as

Over Fishing



Over Hunting



Impact of lowered genetic diversity

1. lowers reproductive success/rates due to inbreeding depression
2. Populations less adaptable to changing environment

Recovery

Some species may **recover** if strategies are put in place to stop the over exploitation. Other species have a naturally **low genetic diversity** in their population and yet remain viable.

2. Invasive Species

Invasive Species

Stage	Description
Introduced Species	Humans have <u>moved</u> species intentionally/accidentally to a <u>new</u> geographic location.
Naturalised Species	When introduced species become <u>established</u> in their <u>new</u> location.
Invasive Species	When the naturalised species <u>spread rapidly</u> and <u>eliminate</u> native species.

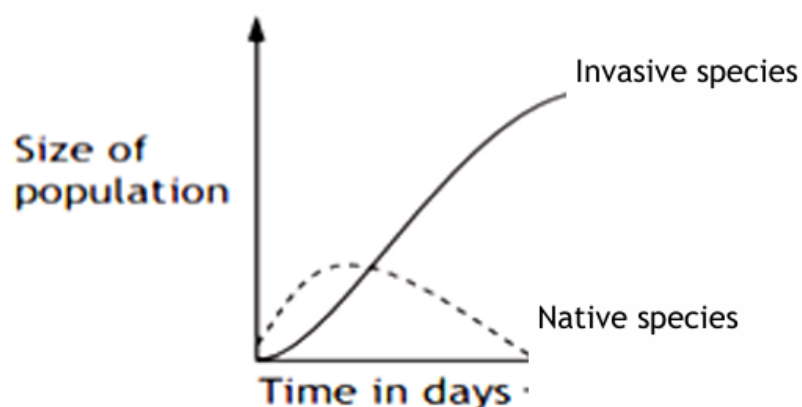
Their new location is free from

- (a) Natural Predators
- (b) Natural Parasites
- (c) Natural Pathogens
- (d) Competition

The native species eliminated by invasive species

- (a) Prey on native species.
- (b) Outcompete native species for resources.
- (c) Hybridise with native species.

Why are native species eliminated by

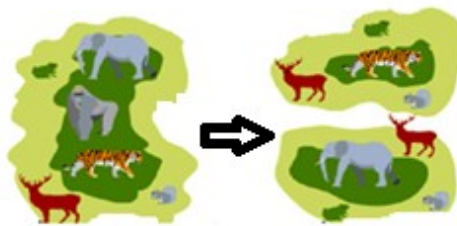


2. Threats to Biodiversity

Habitat Fragmentation

The clearing of habitats by humans for roads/ housing etc.

This causes the habitats to split; becoming smaller & more isolated.



fragmentation

Degradation of edges of fragments causes increased competition between species.

This leads to a decrease in species & genetic biodiversity .

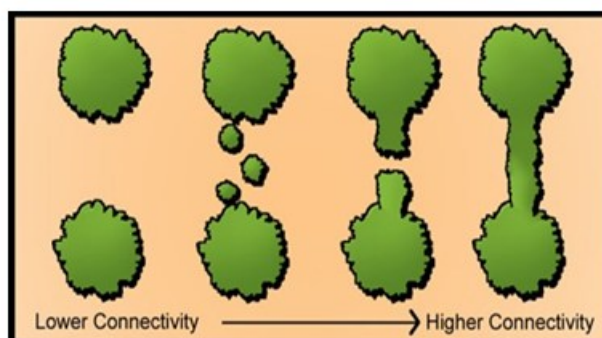
1. lowers reproductive success/rates due to inbreeding depression
2. Populations less adaptable to changing environment

Habitat Corridors

Link fragments together enabling movement of animals between fragments.

Advantages

1. Increased access to food/ mates.
2. Allows re-colonisation of small fragments after local extinctions.



2. Threats to Biodiversity

Bottle neck effect

When a large population becomes much smaller due to a catastrophic events
e.g. flood or forest fire

_This lowers genetic diversity:

1. lowers reproductive success/rates due to inbreeding depression
2. Populations less adaptable to changing environment

