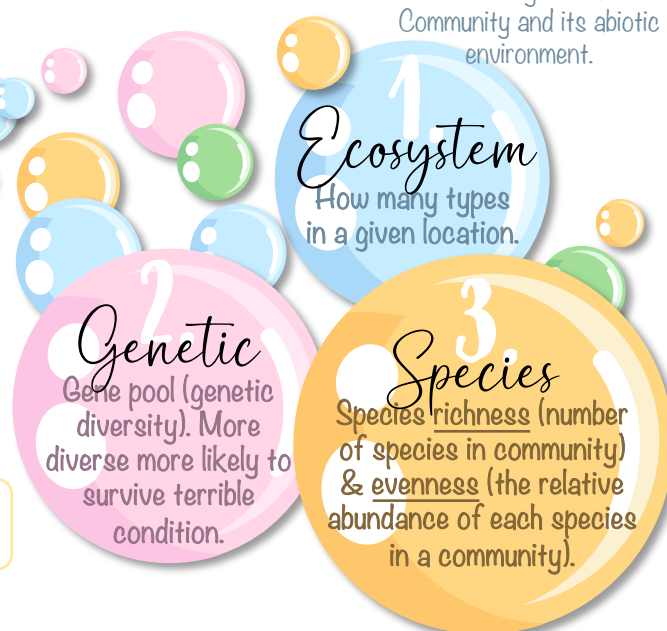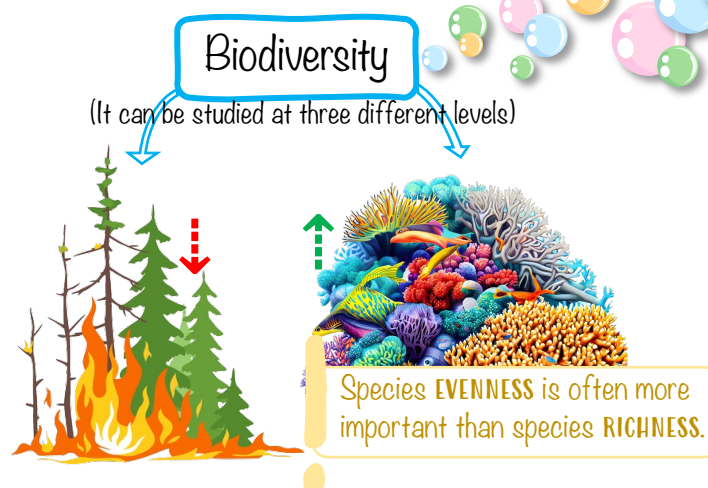# A4.2 Conservation of Biodiversity

Normally creatures can easily adapt with changing pressures. This is natural and it is called evolution.

65 millions years ago was the 5ᵀᴴ MASS EXTINCTION (caused by asteroid) killed dinosaurs.

6ᵀᴴ MASS EXTINCTION →

Human Activities
[Anthropogenic Species Extinction]

An ecosystem consists of all the organisms and the physical environment with which they interact. Community and its abiotic environment.
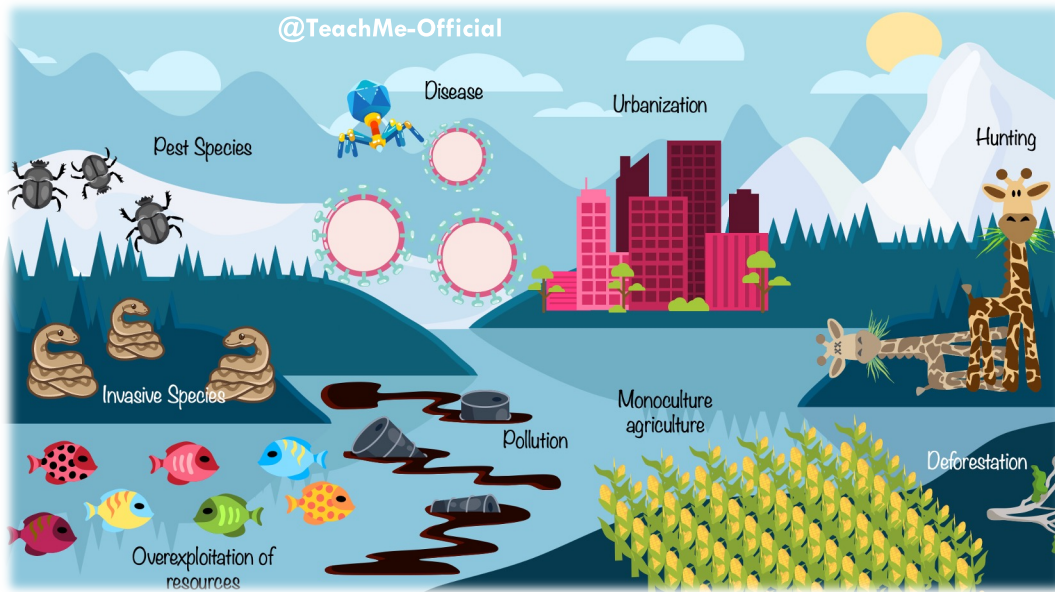
BIODIVERSITY – The variety of life found within an area. (Not just number of life).

Biodiversity

(It can be studied at three different levels)

1 Ecosystem
How many types in a given location.

2 Genetic
Gene pool (genetic diversity). More diverse more likely to survive terrible condition.

3 Species
Species richness (number of species in community) & evenness (the relative abundance of each species in a community).

Species EVENNESS is often more important than species RICHNESS.

Causes Of Biodiversity Crisis...

HOW?	DESCRIPTION
Overuse Resources	For example, fishing.
Hunting	Rhino populations decreases as hunting for their horns continue.
Deforestation	Due to need for land, extraction of mineral and more.
Pollution	For example, air pollution, water pollution (microplastics) etc.
Monoculture	When one kind of crop is planted so that it can be mass produced. Biodiversity is reduced since now only one crop occupies area.
(↑) Pest Species	Any organism that is considered harmful or undesirable due to its impact on human activities, agriculture, ecosystems, or health. They could be native or not.
Invasive Species	Species that are not indigenous, or native, to a particular area. They can cause great harm to the new area. Eg is Burmese python
Urbanization	Growing population means more buildings occupying what used to belong to other organisms.
Disease	Spread of disease in both humans and other organisms.

Teach Me

A4.2 Conservation of Biodiversity

Disease

Pest Species

Urbanization

Hunting

Invasive Species

Pollution

Monoculture agriculture

Deforestation

Overexploitation of resources

Biodiversity Reduction

Environment Exploitation

Human Greed/Need

!! Remember to do reseach on your own to find another example for case study 1 and another for case study 2!

CASE STUDIES 1: ORGANISMS THREATENED BY ANTHROPOGENIC ACTIVITIES

NORTH ISLAND GIANT MOA

- ☐ Very large herbivorous birds
- ☐ Extinct within 100 years after human arrival in around 1200-1300CE
- ☐ Show that anthropogenic extinction (by hunting) has been occuring for centuries

CARIBBEAN MONK SEAL

- ☐ Seal was used for its oil
- ☐ Showed little fear towards humans, therefore easy targets
- ☐ Officially declared extinct in 2008

CASE STUDIES 2: ECOSYSTEM LOSS

DIPTEROCARP FOREST

- ☐ Dipterocarp forests in Asia are stripped of their trees.
- ☐ Deforestation provides land for agricultural use.
- ☐ Often replaced with palm oil trees (called a monoculture).
- ☐ Leads to loss of diversity.

IPBES

Intergovernmental Science-Policy Platform On Biodiversity And Ecosystem

They publish comprehensive reports that provide significant and reliable scientific guidance for policymakers.
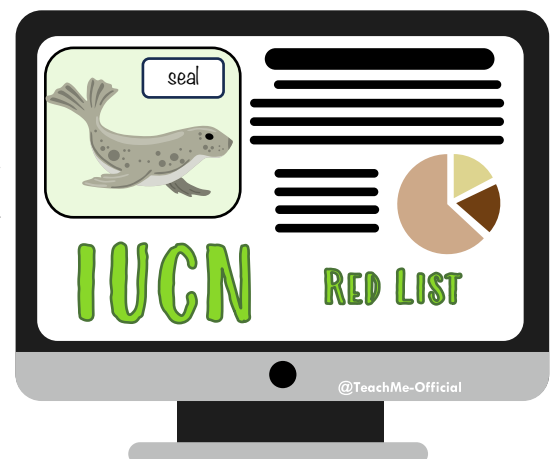
THE EDGE OF EXISTENCE PROGRAM

- ● IUCN RED LIST (example next page)
  Shows the status of each species

  +

- ● EVOLUTIONARY HISTORY (DNA SEQUENCING)

EDGE* SCORE
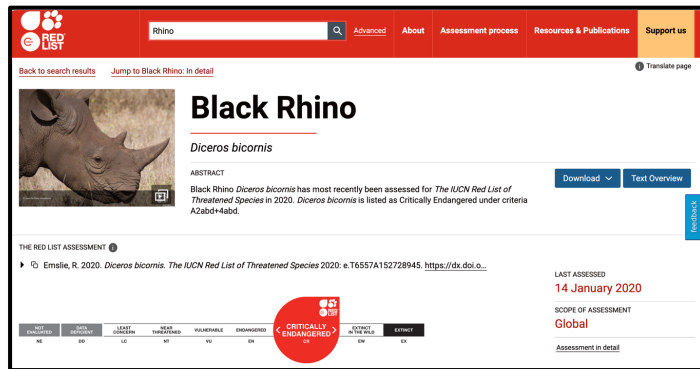(Used to identify which organisms are most at risk)

seal

IUCN RED LIST

(*EDGE = Evolutionarily Distinct & Globally Endangered)

Teach Me

A4.2
Conservation of Biodiversity

Example of the back rhino on https://www.iucnredlist.org

It is CRITICALLY ENDANGERED!

HUMAN EFFORTS TO IMPROVE... IN situ efforts (Managing natural areas)
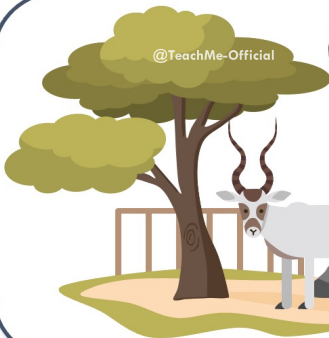
National Parks

An area of land dedicated to preserving wildlife, visitors are allowed but not development or buildings.

Rewilding

Undo prior damage by removing built infrastructure and promote ecosystem regeneration.

Nature Reserves

Smaller areas than national parks but with the same purpose.

Reclamation

Projects aimed at rebuilding and replant as much of an ecosystem.
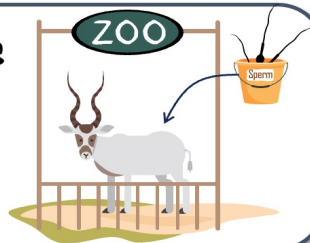
HUMAN EFFORTS TO IMPROVE... EX situ efforts (Managing species outside their natural areas)
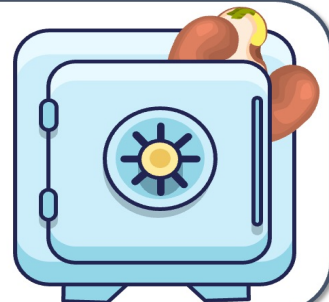
Breeding Programs

Animal husbandry faculties as well as artificial insemination to promote diversity within captive populations.

Seed Banks

A place to safely store living seeds which can be used to repopulate a species if necessary. Ideally in cool, dark and dry conditions.
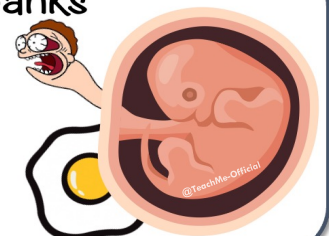
Botanical Gardens

Provides a living store of plant material which helps promote biodiversity and helps their conservation. Some species only exist in artificial garden facilities. Helps preserve rare, threatened or endangered species.

Animal Tissue Banks

Includes germplasm which comprises of sperm, eggs and embryos to be used in captive breeding programs. And somatic tissue for research and cloning.

Notes