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What is **Biodiversity**?

Come
with us
on
a journey.....



MANY SPECIES • ONE PLANET • ONE FUTURE
WORLD ENVIRONMENT DAY • 5 JUNE 2014



UNEP



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Biodiversity

What does “Bio” mean?

Bio =

Life



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Biodiversity

What does “Diversity”
mean?

Diversity = **V**ariety



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What is Biodiversity

-“The variety of life in all its forms,
levels and combinations”

Biodiversity is the variety of life on Earth, it includes all organisms, species, and populations; the genetic variation among these; and their complex assemblages of communities and ecosystems.



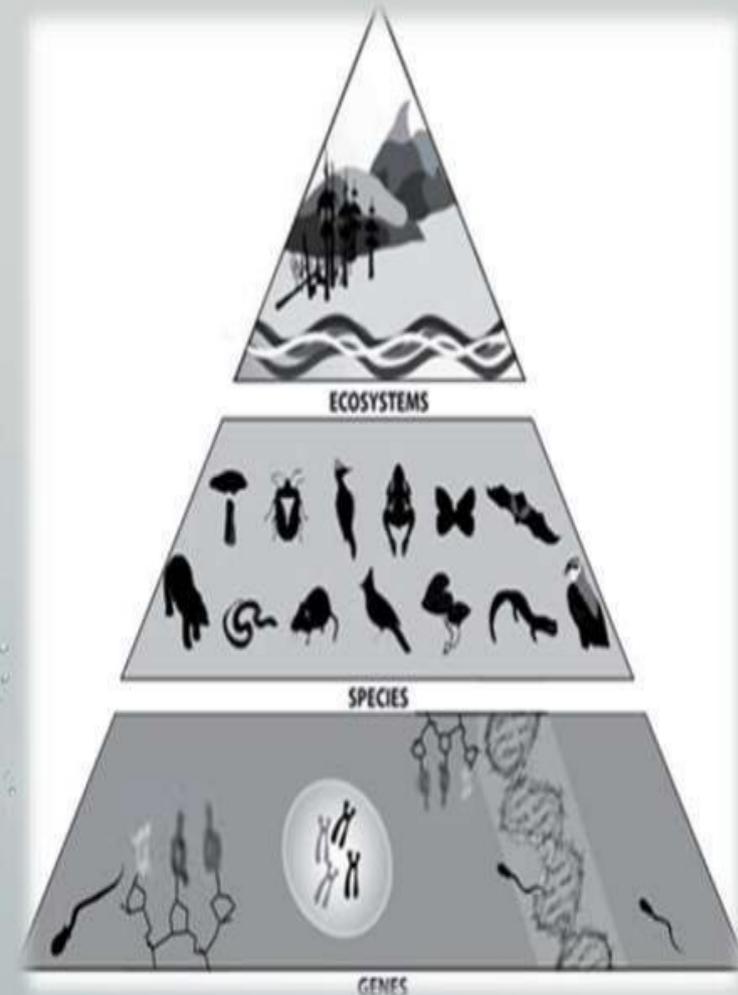


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Types of Biodiversity

- There are three types of biodiversity:-
 - Genetic Biodiversity
 - Species Biodiversity
 - Ecosystem Biodiversity





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Genetic Diversity

Genetic diversity is the variation of genes for all individuals within a species; it determines the uniqueness of each individual, or population, within the species.

The expression of DNA into traits, such as the ability to tolerate drought or frost, facilitates adaptation to changing conditions.

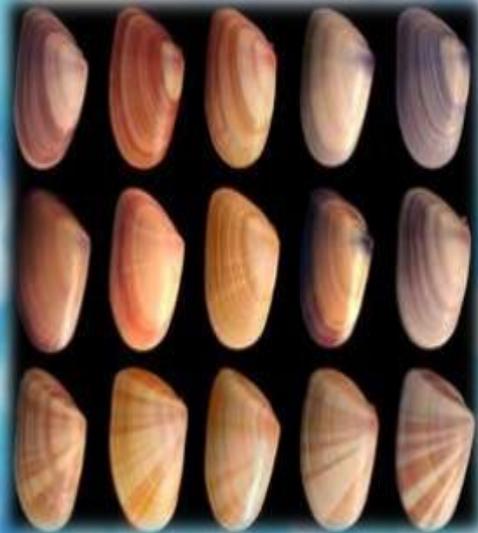
The diversity within species partly results from the selection by farmers based on specific traits to meet environmental and other conditions.



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Genetic Biodiversity





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Species Level

A species is a group of morphologically similar organisms that are able to interbreed and produce fertile offspring.

A diverse number of species exists for plants, animals and micro-organisms.

The diversity of plants and animals used in agriculture resulted from human management of biodiversity for food, nutrition and medicinal purposes.



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Species Biodiversity





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Ecosystem and Biodiversity

An ecosystem is a dynamic complex of plant, animal and micro-organism communities and their non-living

environment interacting as a functional unit.

The diversity of agro-ecosystems partly results from both agricultural and non-agricultural land and water uses.



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Ecosystem Biodiversity





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Should we be concerned about biodiversity?

What we know:

The Earth is losing species at an alarming rate

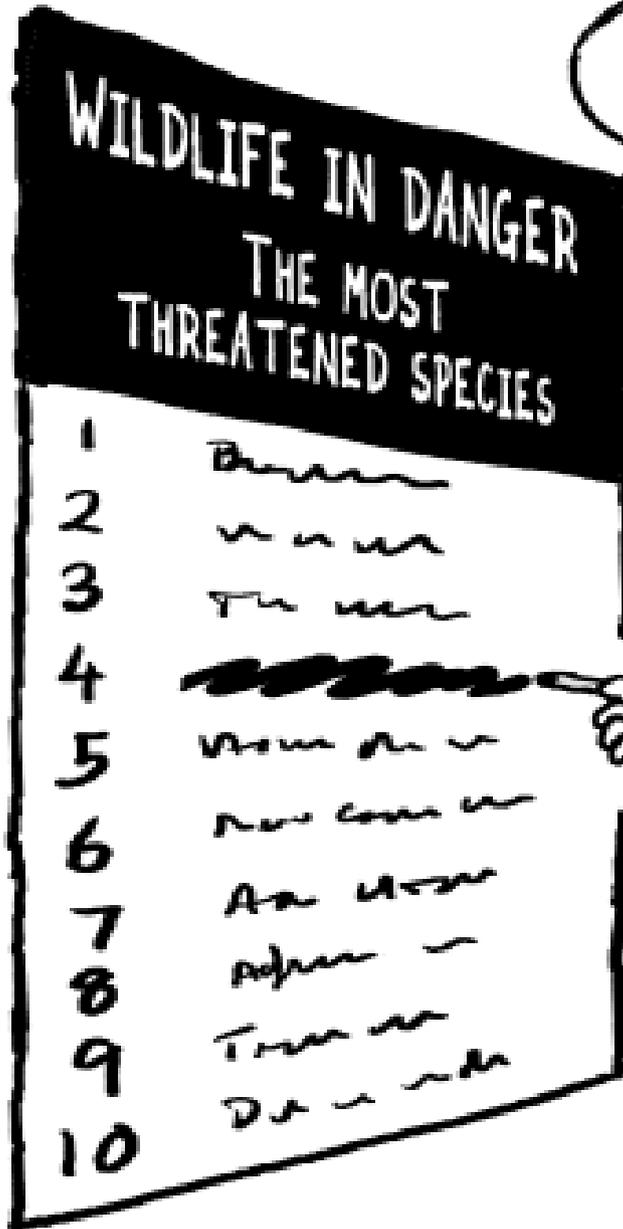
Some scientists estimate that as many as 3 species per hour are going extinct and 20,000 extinctions occur each year.

when species of plants and animals go extinct, many other species are affected.



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That's one more creature we can remove from the endangered species list.

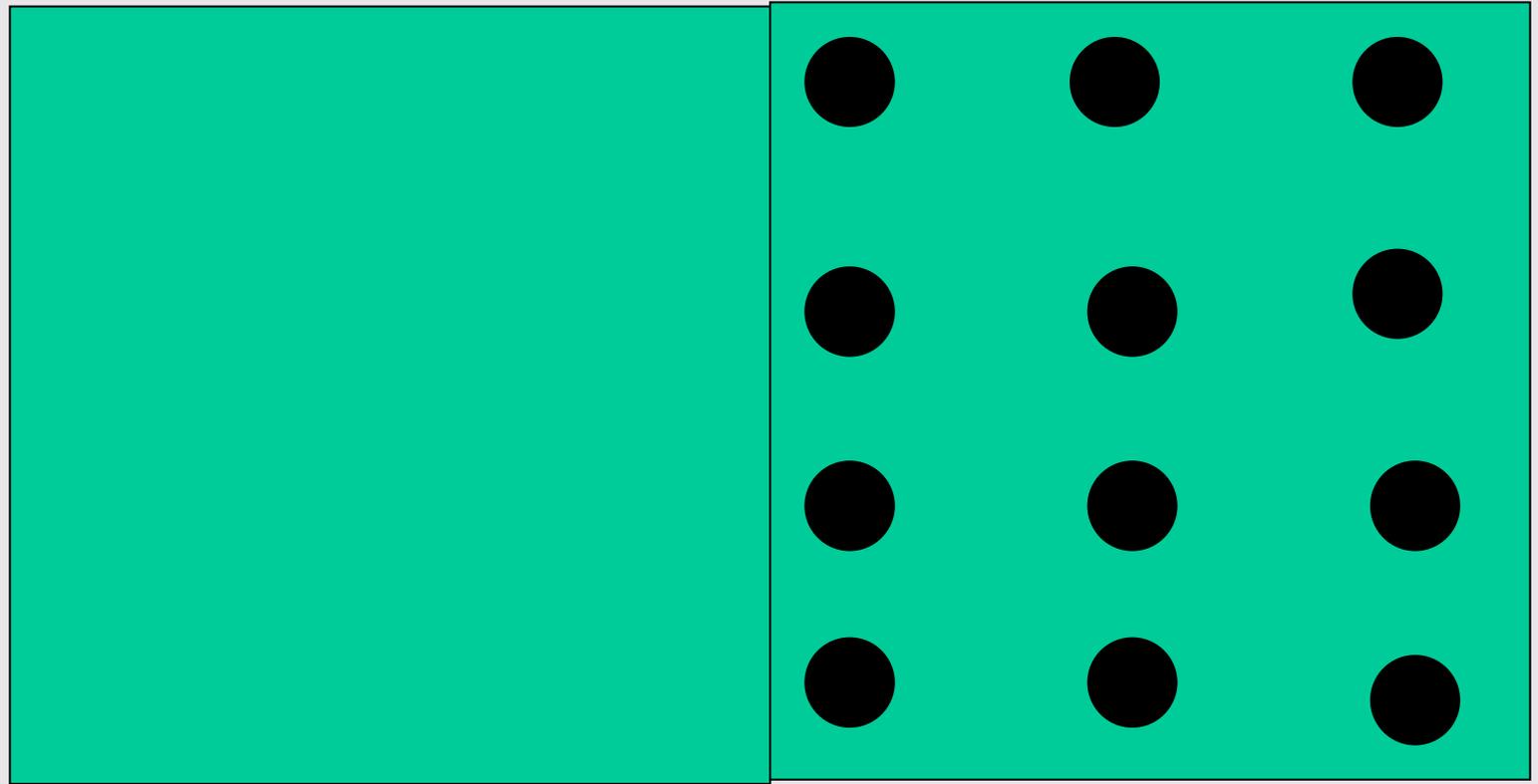
It's become extinct.





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Which is more diverse?



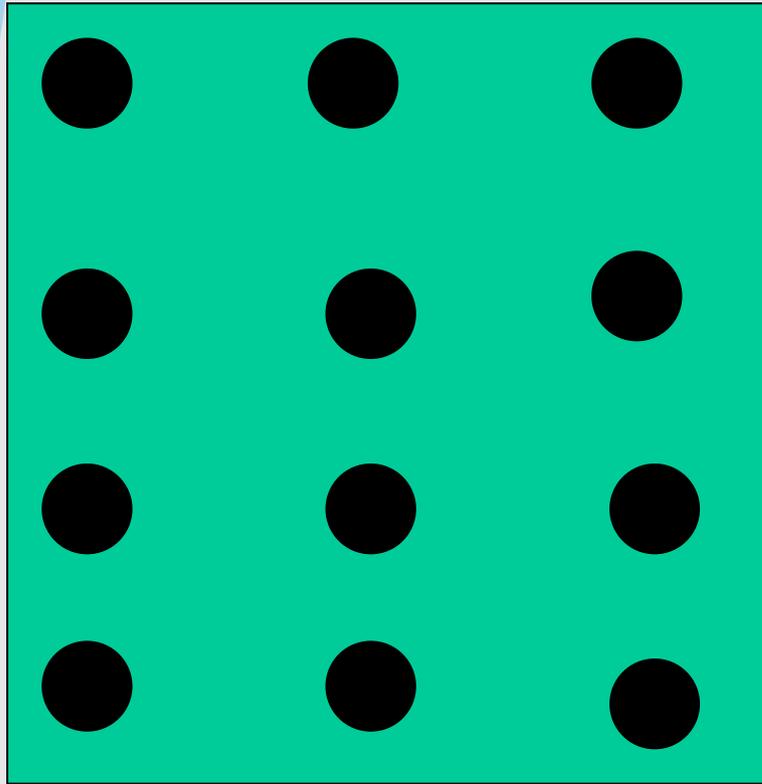
A

B

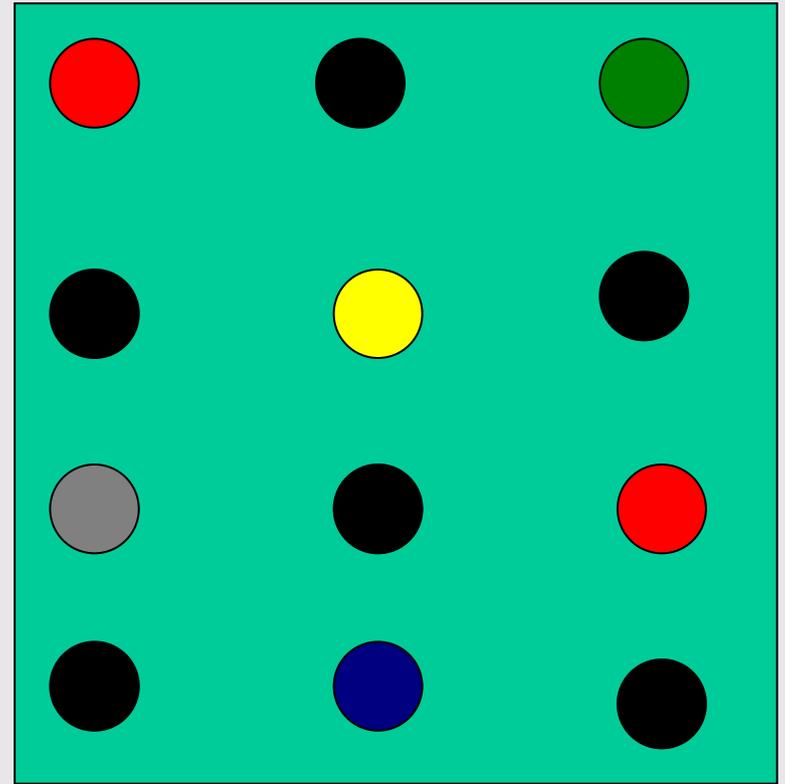


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Which is more diverse?



A



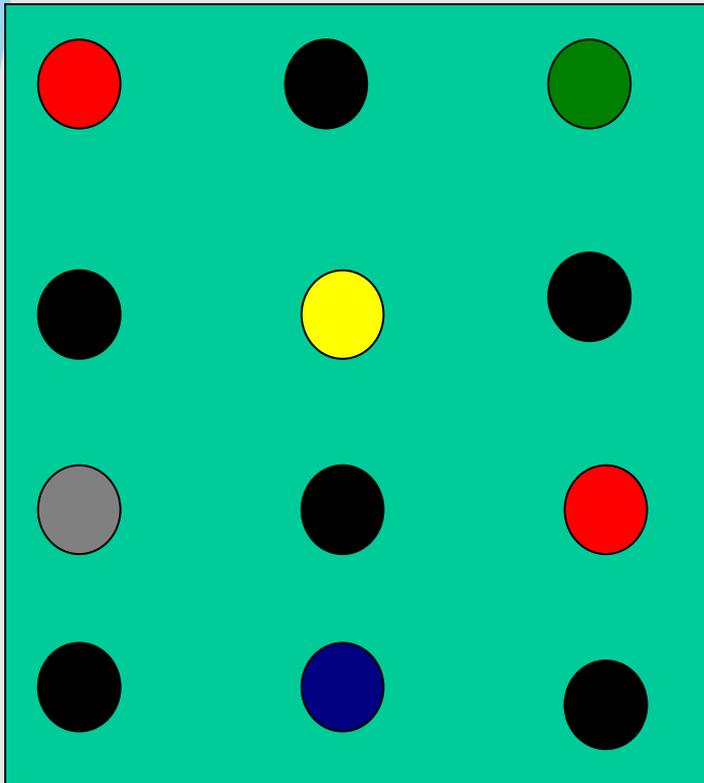
B



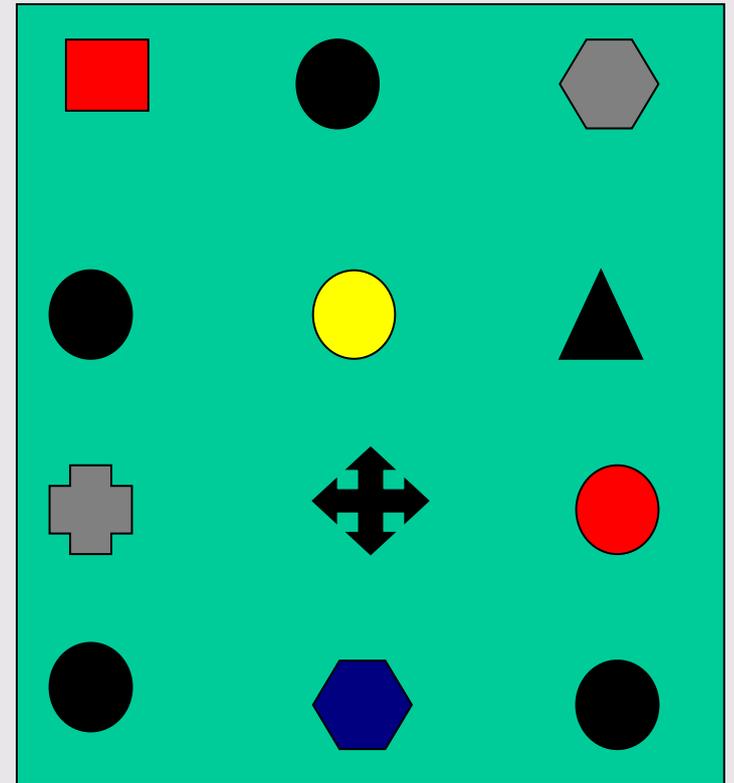
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Which is more diverse?



A



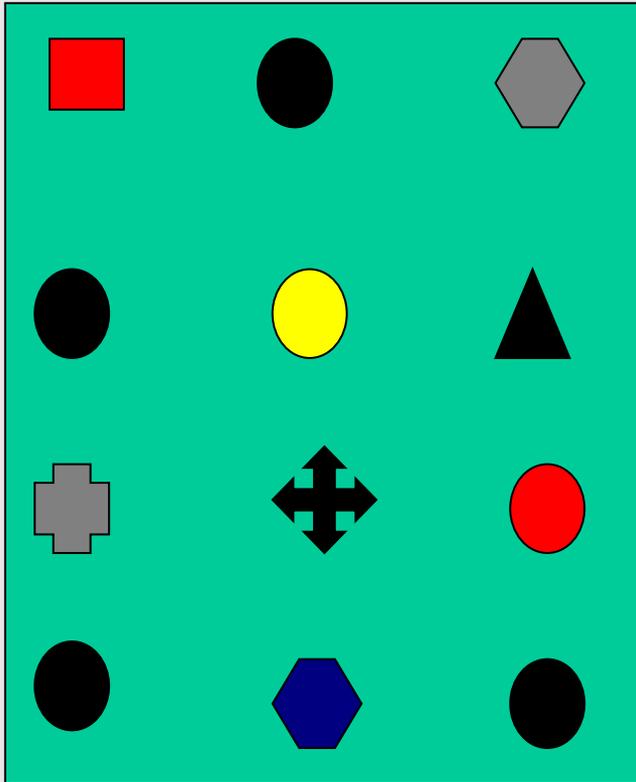
B



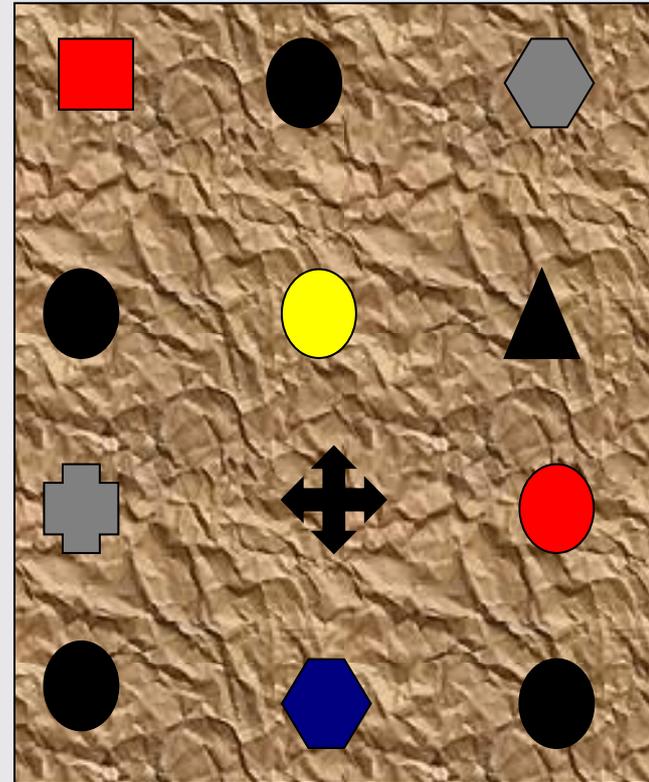
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Which is more diverse?



A



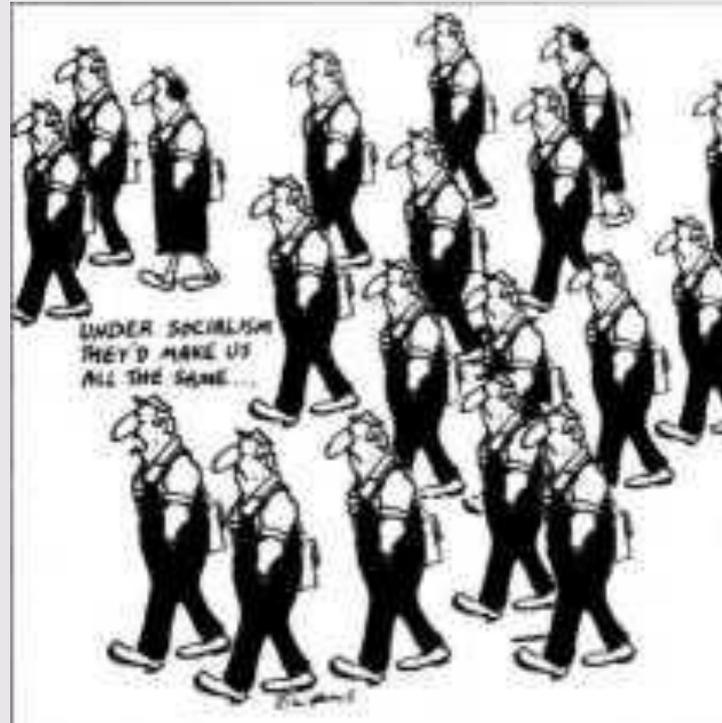
B



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Which has more cultural diversity?



A



B



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Which has more biodiversity?



A



B



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Which has more biodiversity?



A



B



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Loss of Biodiversity

Human activities are the major threat to loss of biodiversity:-

Habitat destruction/ degradation/

Diseases

Over exploitation

Jhum cultivation etc.



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Causal factors of threat

Causal factors of threat may be natural or man made. They are—

Development pressure

- a. Forest Based Industries
- b. Irrigation Projects
- c. Mining
- d. Oil Drilling
- e. Pollution
- f. Resource Extraction
- g. Road & Transport



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Encroachment

- a. Agriculture
- b. Expansion Of Forest Villages
- c. Fishery
- d. Grazing / Increased Domestic Animals
- e. Habitat Depletion / Change
- f. New Settlements
- g. Shifting Cultivation



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Exploitation

- a. Collection made by scientific/educational institutions**
- b. Exploitation by local authorities as revenue resources**
- c. Firewood collection**
- d. Food gathering and hunting**



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Human induced disasters

- a. Floods**
- b. Major oil spills/leakage**
- c. Epidemics**
- d. Forest fires**



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Management of Human Resource

- a. Change in people's lifestyle**
- b. Dilution of traditional values**
- c. Human harassment**
- d. Inadequate trained human resources**
- e. Lack of effective management**
- f. In appropriate land use**



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What is the value of Biodiversity?

- 1. Consumptive use value: Based on direct consumption.**
- 2. Productive use value: Based on product use.**
- 3. Social value: Based on socio-cultural use.**
- 4. Ecosystem service value: Based on valuation of various ecosystem function.**



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BENEFITS OF BIODIVERSITY

Consumptive value:

- Food/Drink
- Fuel
- Medicine
- Better crop varieties
- Industrial Material

Non-Consumptive Value:

- Recreation
- Education and Research
- Traditional value



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Ecological services:

- Balance of nature
- Biological productivity
- Regulation of climate
- Cleaning of air and water
- Cycling of nutrients
- Control of potential pest and disease causing species
- Stabilization of land against erosion
- Carbon sequestration and global climate change
- Maintenance of Soil fertility



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THE GREATEST THREAT





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BIO DIVERSITY

AND THREATS TO IT....





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THREATS TO BIODIVERSITY

Natural causes:

- Low population
- Low breeding rate
- Natural disasters

Anthropogenic causes:

- Overexploitation of selected species
- Pollution
- Global warming and climate change
- Agriculture



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CONSERVATION OF BIODIVERSITY



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What is conservation?

Scientific use, preservation and management of natural resources for the interest of mankind is known as conservation



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Steps to Preserve Biodiversity

1. Not to disturb the land
2. Control of population growth
3. Reduction in emission of green house gases
4. Conservation of biodiversity



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Types of Conservation

In situ conservation (On-site preservation):

The conservation of natural resources through their maintenance within natural or even human-made ecosystems in which they occur e.g. national park, sanctuaries etc.

Ex situ conservation (Off-site preservation):

The conservation of genetic resources outside their habitats by perpetuating sample populations through establishment of gene banks, which include genetic resource centers, zoos, aquaria, botanical gardens etc. or in the seed banks, pollens, ova. cells etc.



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Aims of Conservation

- ✘ To avoid unplanned development
- ✘ To ensure continuous yield of useful plants and animals
- ✘ Scientific exploitation of natural resources
- ✘ Proper management of natural resources
- ✘ Preservation of rare species of animals and plants



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Bioethical Arguments for Conservation of Biodiversity

1. Each species has right to exist regardless to human need.
2. All species are interdependent
3. Human must live within the same ecological limitations as other species do
4. People must take their responsibility for their actions
5. People have responsibility to future generation
6. Resources should not be wasted