



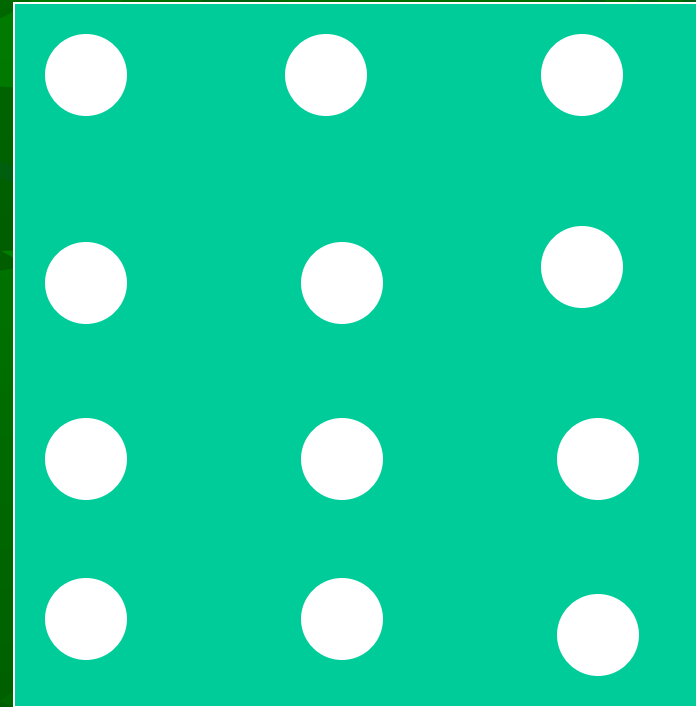
Biodiversity:

Who Cares?

Which do you like better?

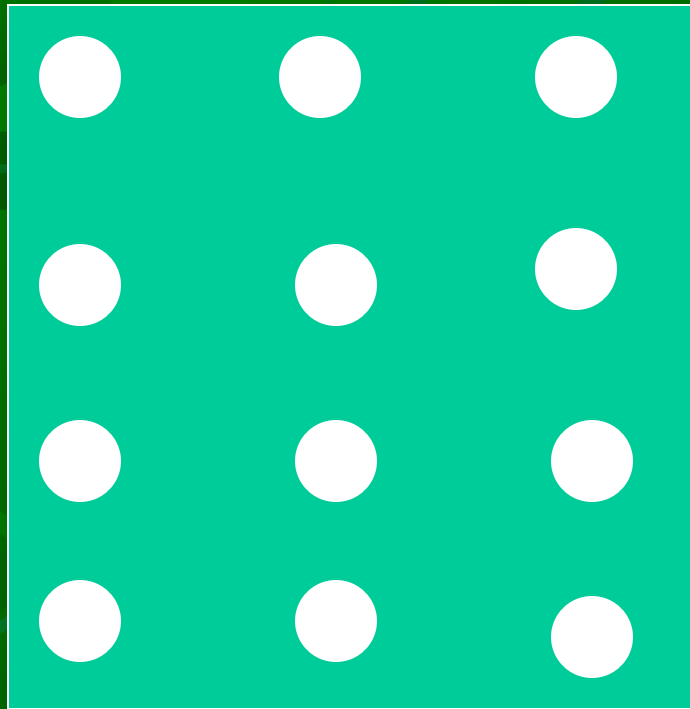


A

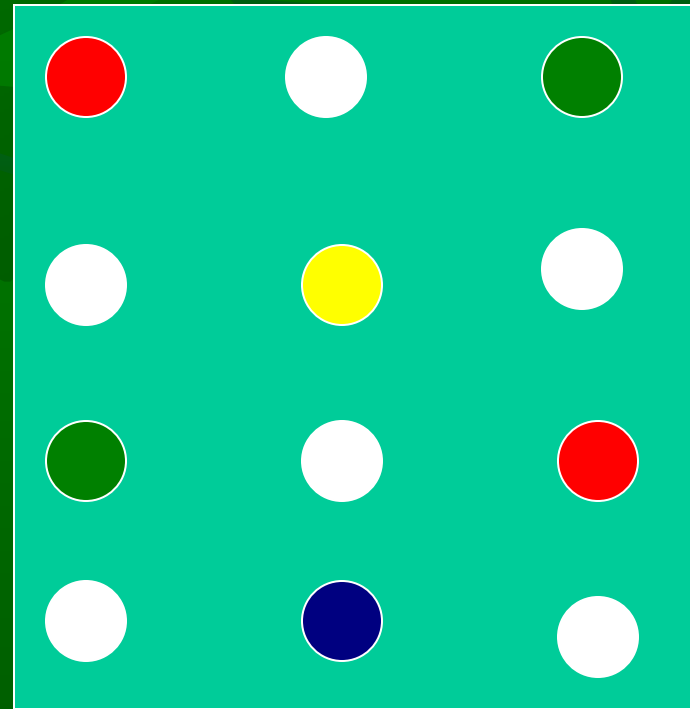


B

Which do you like better?

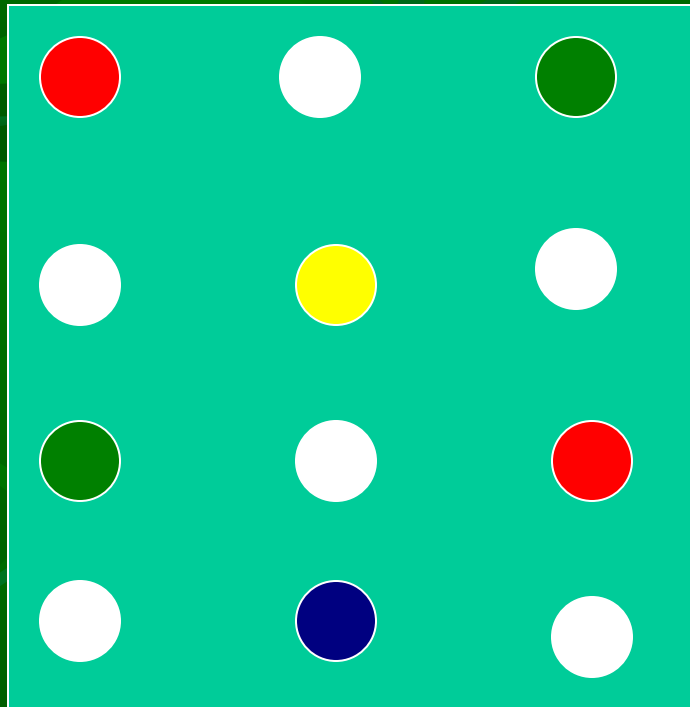


A

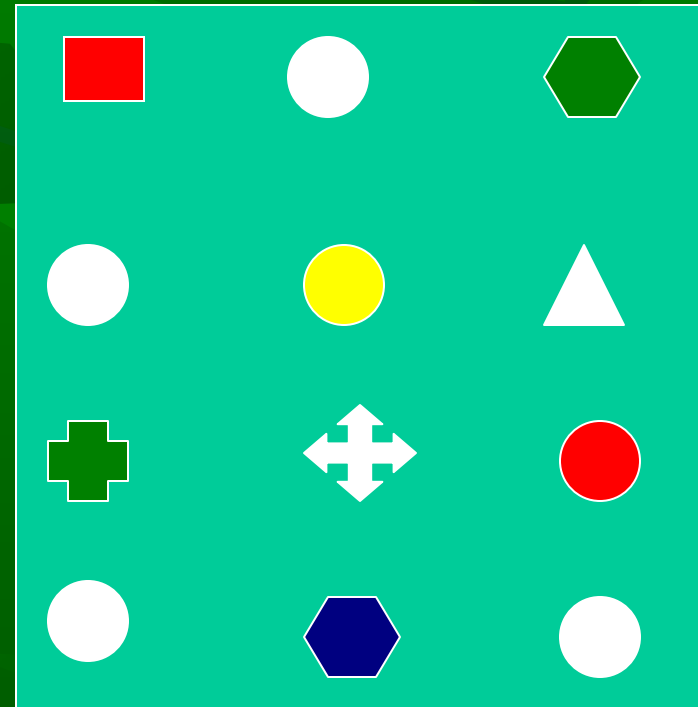


B

Which do you like better?

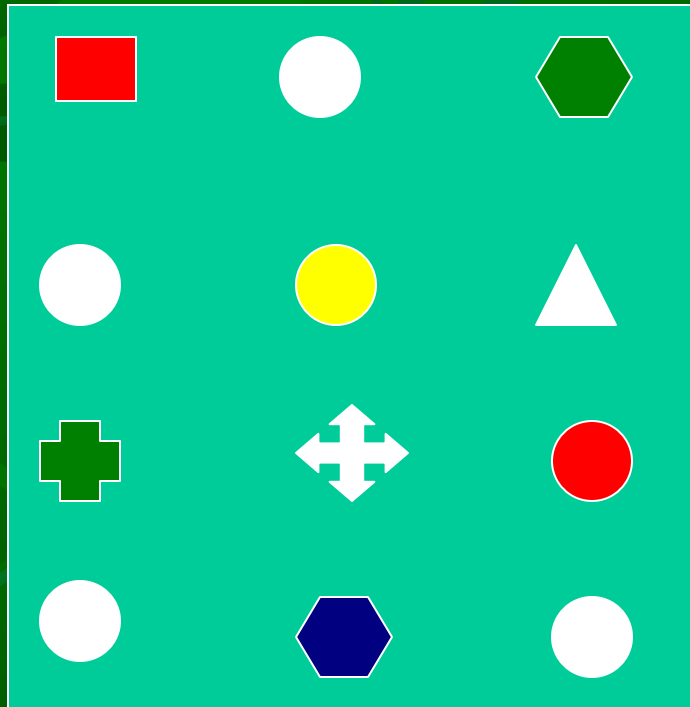


A

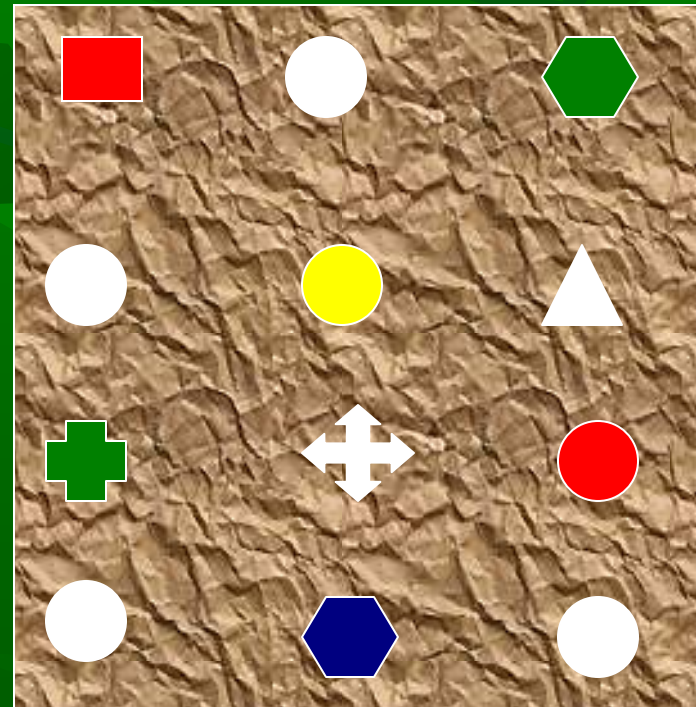


B

Which do you like better?

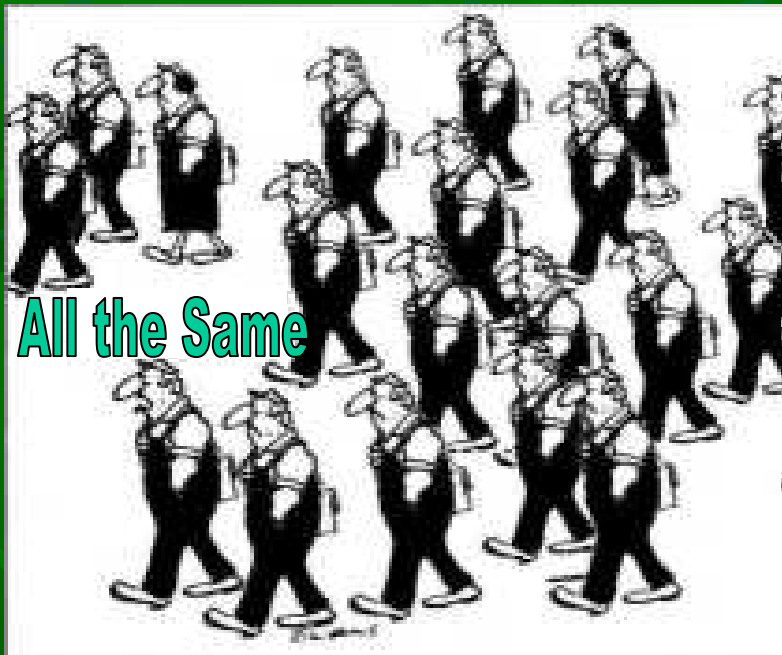


A



B

Which do you like better?



A



B

Which do you like better?



A



B

Which do you like better?



A



B



What do you think
biodiversity
means?

Biodiversity

What does “Bio” mean?

Bio = Life

Biodiversity

What does “Diversity” mean?

Diversity = **V**ariety

Biodiversity is the immense variety and richness of life on Earth. Biodiversity includes:



- the diversity of genes within all living organisms.



- the diversity of species. For example, morel, corn, rainbow trout, praying mantis and humans are all different species.



- the diversity of ecosystems (coral reefs, prairies, forests, wetlands, etc.).

Biodiversity is the variety of life on Earth and the essential interdependence of all living things

- **Scientists have identified more than 2 million species.**
- **Tens of millions -- remain unknown**
- **The tremendous variety of life on Earth is made possible by complex interactions among all living things including microscopic species like algae and mites.**

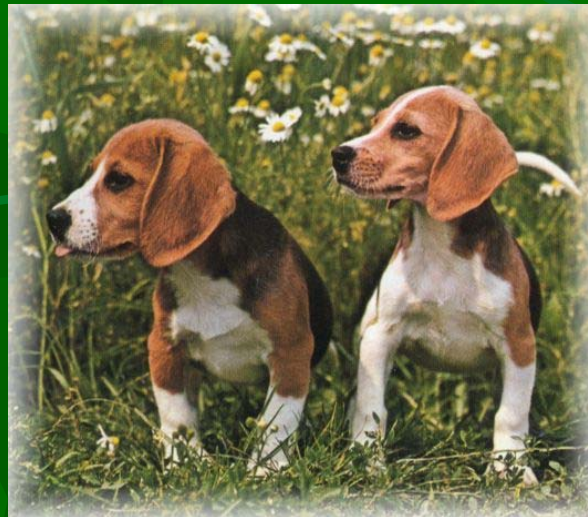
There are 3 components of biodiversity

Diversity of Genes

Chihuahuas, beagles, and rottweilers are all dogs—but they're not the same because their genes are different.



Chihuahua



Beagle



Rottweilers

There are 3 components of biodiversity

Diversity of Species

For example, monkeys, dragonflies, and meadow beauties are all different species.



Saki Monkey



Golden Skimmer



Meadow Beauty

There are 3 components of biodiversity

Variety of Ecosystems

Prairies, Ponds, and tropical rain forests are all ecosystems. Each one is different, with its own set of species living in it.



Paines Prairie



Hoh Rain Forest

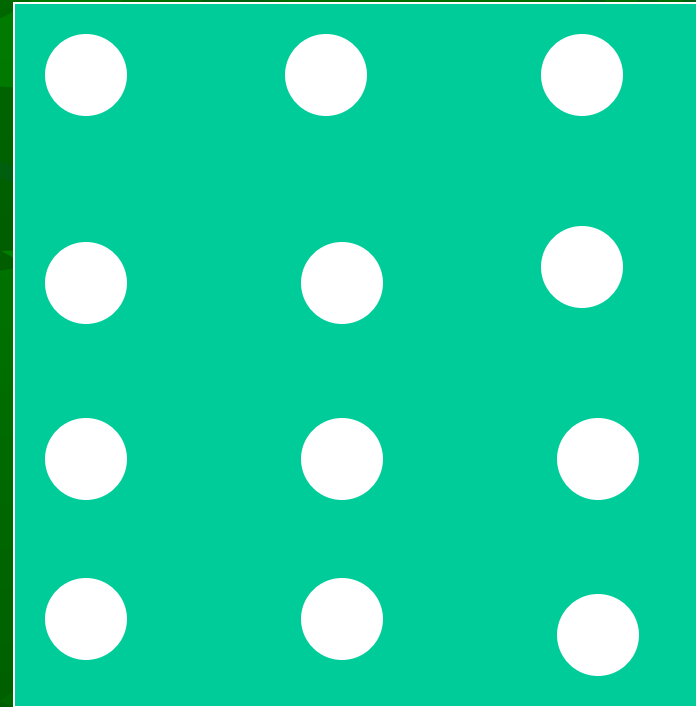


Florida Sand hill Pond

Which is more diverse?

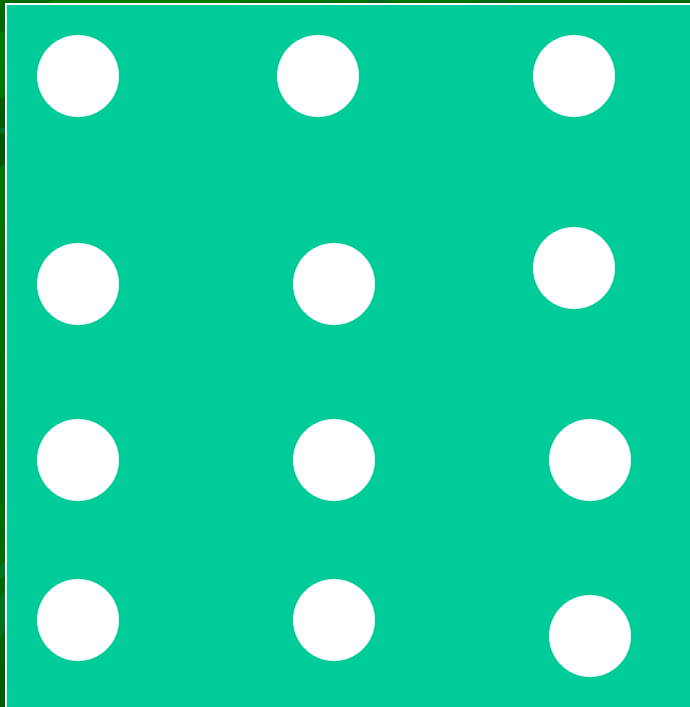


A

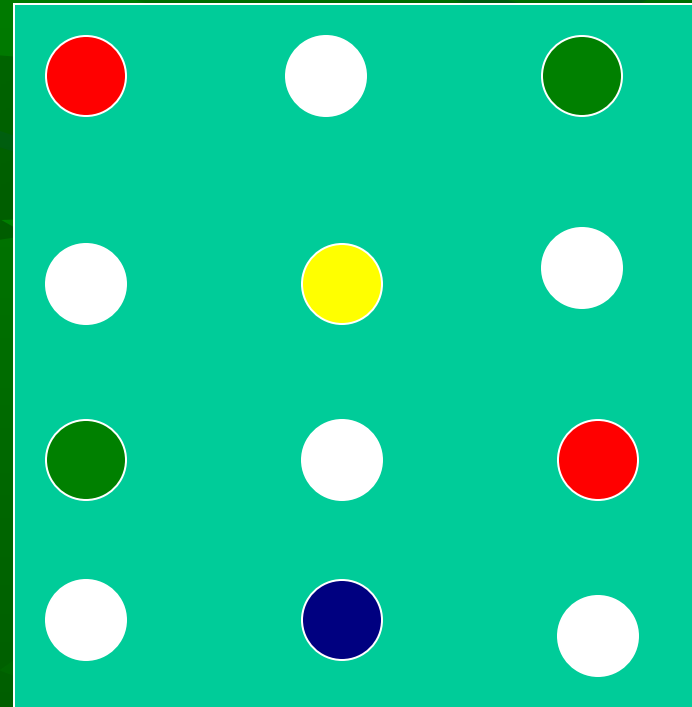


B

Which is more diverse?

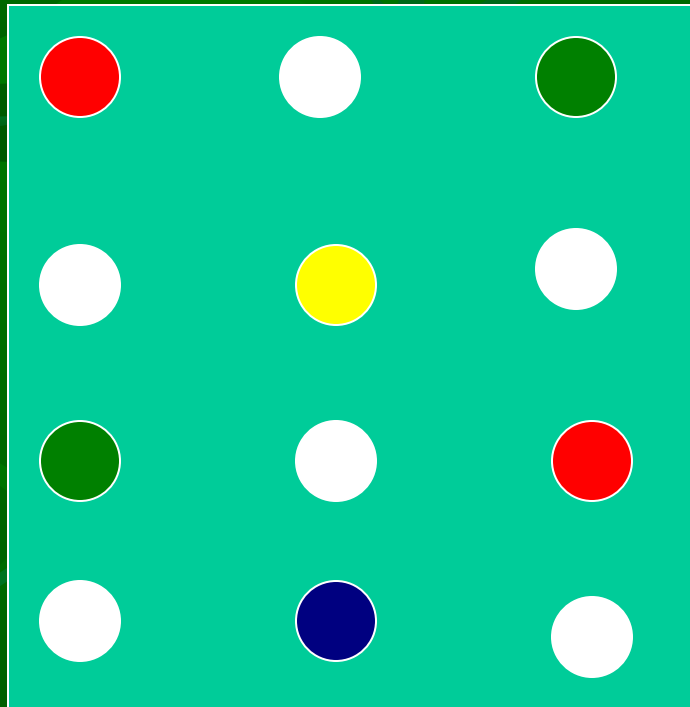


A

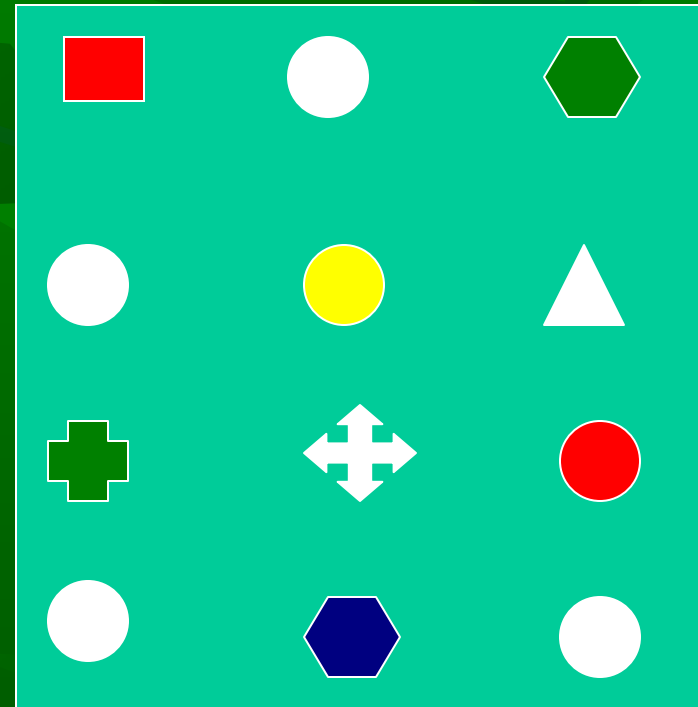


B

Which is more diverse?

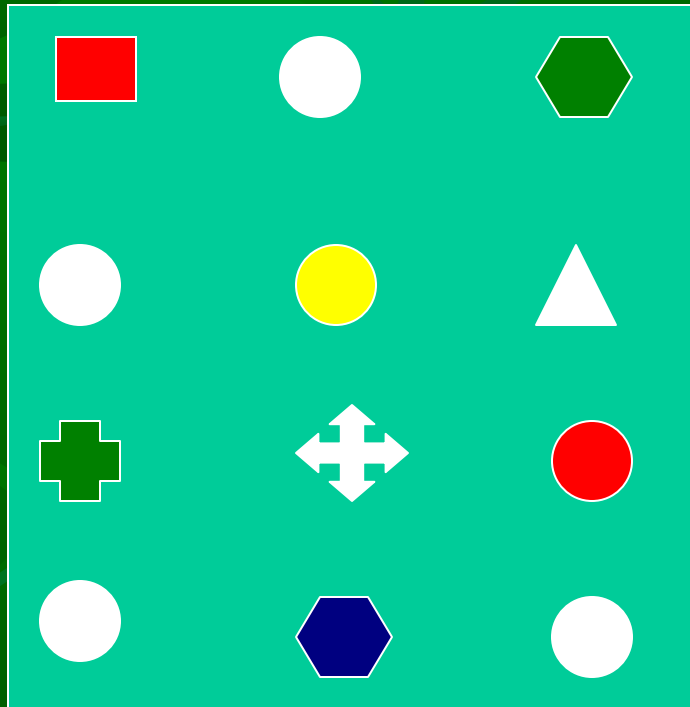


A

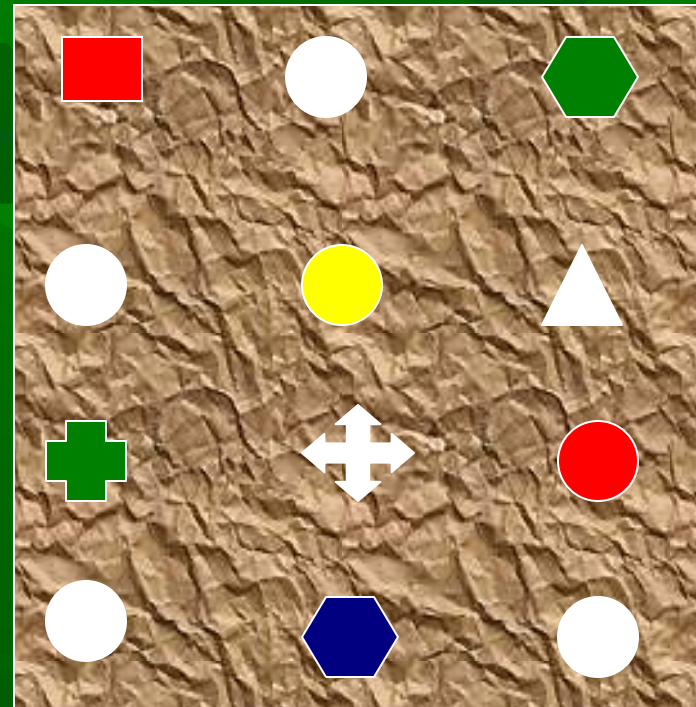


B

Which is more diverse?

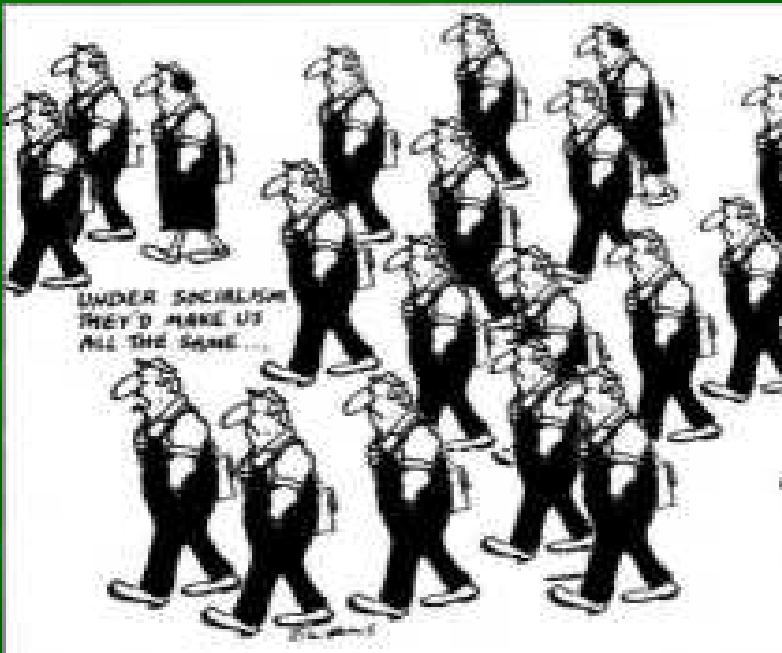


A



B

Which has more Cultural Diversity?



A



B

Which has more biodiversity?



A



B

Which has more biodiversity?



A



B

Biodiversity has Intrinsic Value

**Intrinsic Value = Something that has value
in and of itself**

Biodiversity also has Utilitarian Value

Utilitarian Value = the value something has as a means to another's end.

Utilitarian values include:

- **Goods**
- **Services**
- **Information**

What do we get from Biodiversity?

Oxygen

Food

Clean Water

Medicine

Aesthetics

Ideas

Benefits of Biodiversity

- Food. As has already been described, the variety of natural and organic plants found around the world feed animals and humans alike.
- Beverages. Much the same as food, the diversity of natural materials provide an abundance of ingredients for beverages.
- Medicine. Most medicines are derived from natural ingredients, most specifically plants. Many antibiotics are also derived from living micro-organisms such as bacteria and fungi.
- Building materials. Rubber, oil, certain types of fibres, dyes and adhesives all come from natural origins.

Why is Biodiversity important?

- Species and ecosystems provide essential goods and services upon which human well-being depends. They support our health, our environment and our economies.

Ecosystem services include:

- Water purification - plants, animals and microorganisms in wetlands act as sponges to filter sediments and toxins from inflowing waters.
- Pollination - insects pollinate crops worth \$6-12 billion a year in the USA.
- Disease control - natural enemies (predators and parasites) of disease carrying organisms (for example, ticks and mosquitoes) control diseases such as malaria, Lyme disease, hantavirus and cholera.

Ecosystem goods include:

- Food -
 - More than 7000 species of plants are cultivated or harvested from the wild.
 - Fish and other marine animals provide 20% of animal protein consumed, at a value of \$50-\$100 billion annually.
- Medicines - 118 of the top 150 prescription drugs in America contain chemicals derived from plants, fungi and other species.

Houston Toad

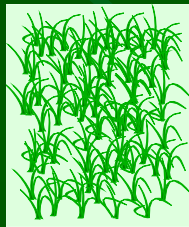
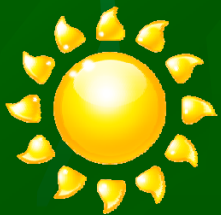
- To someone with heart disease, this guy's a prince!



- He produces alkaliads which prevent heart attacks in humans

Food Chain

- **THE SUN** provides food for **GRASS**
- The **GRASS** is eaten by a **GRASSHOPPER**
- The **GRASSHOPPER** is eaten by a **FROG**
- The **FROG** is eaten by a **SNAKE**
- The **SNAKE** is eaten by a **HAWK**.



Why are people concerned about the loss of biodiversity

- **Our growing population and increasing consumption of natural resources places enormous stresses on natural ecosystems and species within them.** Loss of and damage to habitats, over-harvesting, introduction of non-native species to new areas, and climate change are major causes of species extinction and endangerment.
- **Scientists estimate that species extinctions are occurring 100 to 1000 times faster than without human influence. Without a change in our actions half of the world's species may be lost by 2100.**

Threats to biodiversity

Habitat destruction

Pollution

Species Introductions

Global Climate Change

Exploitation

Threats to Biodiversity

The major threat to biodiversity is extinction.

- Hunting, or more specifically over-hunting. Killing animals obviously reduces their numbers and endangers their species.
- Habitat loss. Often habitats are demolished, for example to make way for buildings and roads. A specific type of habitat loss is deforestation, or cutting down trees.
- Invasion by foreign species. The introduction of non-native species (for example, stocking a pond with fish from another part of the world) again means that an ecosystem must cope with a threat to its natural order.
- Pollution. Pollution contaminates natural ecosystems and again poses a threat.
- Climate change. Differing temperatures, amounts of snowfall or rainfall and a variety of other symptoms of climate change can all affect ecosystems in a given area.

In Canada alone, there are 631 endangered species threatened with extinction, including:



White-headed Woodpecker



Atlantic Salmon



Sage Thrasher



Dolly Varden.

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.

How do we help species at risk?

- In Canada, we help species at risk in various ways: there are provincial and federal laws to protect them; scientists, Aboriginal peoples, private landowners, and industries implement recovery strategies; communities help with stewardship and conservation efforts; and many Canadians get involved by taking part in a number of these endeavours

How to Help

- Families can avoid using cleaning products and pesticides that are toxic.
- Gardeners can avoid planting invasive alien species.
- Communities, private landowners, and industries can preserve natural habitats that shelter wild plants and animals.
- Hikers can refrain from leaving their garbage behind and avoid disturbing wildlife species.
- Farmers and loggers can try to reduce their use of pesticides, keep run-off and erosion to a minimum, and protect landscapes that are suitable for wildlife species.
- Motorists can reduce greenhouse gas emissions, which are responsible for climate change, by using public transit, car-pooling, walking or cycling.

