

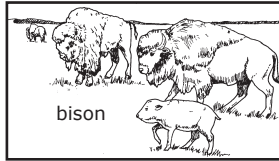
BIODIVERSITY Science Page

WHAT IS BIODIVERSITY?

Biodiversity is the variety of living things on Earth. It includes **ecosystem diversity**, **species diversity**, and **genetic diversity**.

DID YOU KNOW?

Sometimes humans play an important part in creating ecosystem diversity.

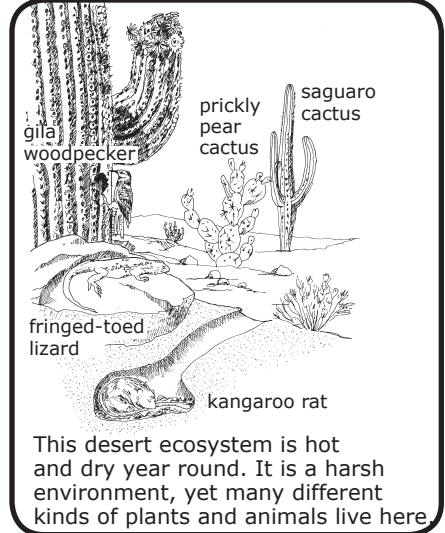
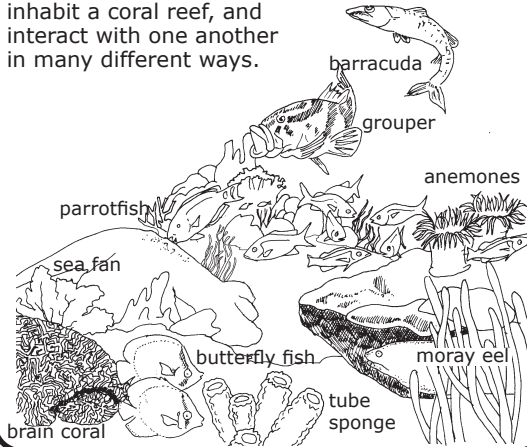


Native Americans set prairies on fire when hunting animals and clearing land. Tall grass and other prairie plants with deep roots survived the fires. The prairie grasses provided food for large herds of bison, which in turn supplied the Indians with food and hides for clothing and shelter.

ECOSYSTEM DIVERSITY

Ecosystem diversity is the variety of ecosystems that exist on Earth. An ecosystem is a community of living things that interact with each other and with the physical environment. Ecosystems can be in water, on land, and even underground. Biodiversity exists in wild ecosystems as well as in agricultural ecosystems.

This coral reef ecosystem is in shallow waters in the tropics, where it is warm year round. An enormous variety of living things inhabit a coral reef, and interact with one another in many different ways.



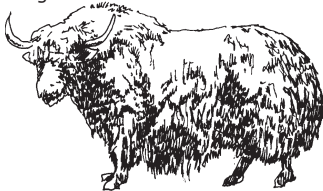
This desert ecosystem is hot and dry year round. It is a harsh environment, yet many different kinds of plants and animals live here

SPECIES DIVERSITY

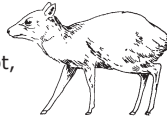
Species diversity refers to the variety of living things on Earth.

The variety of bovine species is one example of species diversity. All bovines are similar in that they are hooved, even-toed mammals, and usually have horns. But within this group of mammals, there is a dazzling variety of shapes, sizes and colors. Altogether there are over 140 different bovine species.

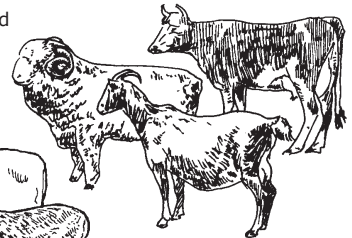
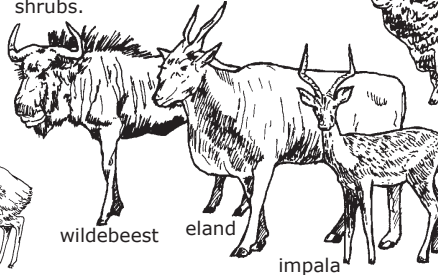
The yak lives in the cold, high mountains of Asia.



The smallest of all antelope, the royal antelope, lives in hot, tropical forests of West Africa.



On the plains of Africa, the wildebeest grazes on grass, the eland browses on leaves and twigs, and the impala feeds on both grass and shrubs.



Domestic cows, sheep, and goats are bovines that live on farms.

GENETIC DIVERSITY

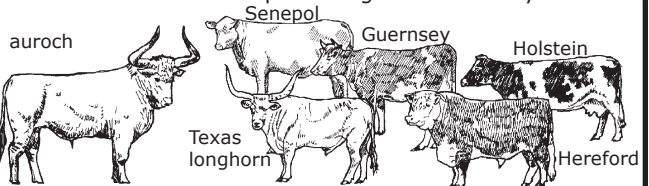
Genetic diversity is the variety of traits found within each species.

There is a lot of genetic diversity among humans.



All humans (*Homo sapiens*) share certain general traits, such as ten fingers and ten toes. Also you may resemble other members of your family, because you inherited your traits from your parents. But each of us is unique!

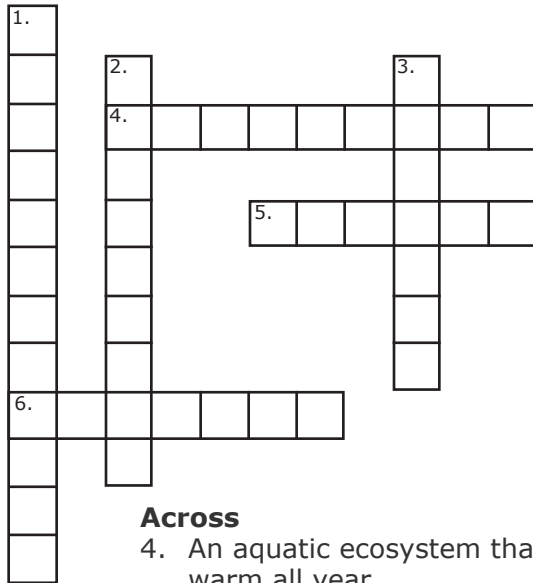
Sometimes humans help create genetic diversity.



Until the 1600s, the wild ancestor of the domestic cow, the auroch, lived in Europe, the Middle East, South Asia, and North Africa. It was bigger and more dangerous than the domestic cow. Several thousand years ago, humans began breeding many different varieties of cows to use for meat, milk, or for pulling wagons and plows.



CROSSWORD PUZZLE



Across

4. An aquatic ecosystem that is warm all year.

5. An ecosystem that is hot and dry year round.
6. The variety of bovines is an example of _____ diversity.

Down

1. The variety of living things on Earth.
2. A community of living things that interact with each other and with the physical environment.
3. The diversity found among humans is an example of _____ diversity.



TRY THIS

Measuring Biodiversity

The number of species that exist in a particular area is a measure of that area's species diversity. In this study, you will compare the species diversity of different areas.

What you need

- * measuring tape
- * 4 sticks
- * 9 meters of string
- * notebooks
- * pencils

What to do

1. Go to an area that you would like to study. It could be a field, a forest, a park, or even a yard.
2. Use the measuring tape to measure out a 2 x 2 meter plot. Put a stick in the ground to mark each corner. Wrap the string around the sticks to mark the edges of your plot.
3. Observe the plants in your plot very carefully. Try to find all the different kinds of plants that are present. It may help to pick a leaf of each plant, and tape them to a chart.
4. Chose a second area to study that is

different from the first area you studied. For example, if your first plot was in a yard, this time choose a forested area or a field.

5. Compare the species diversity of the two plots. Are there differences? Can you explain why there are differences?



SPOTLIGHT ON RESEARCH

Benefiting from Biodiversity in Costa Rica

Costa Rica has the greatest biodiversity of any country in the world. More than 500,000 species have been found there, of which 300,000 are insects. New species are still being found every day. Scientists are working hard to record all of the species that exist in Costa Rica. They have a database of over 2,000,000 collected specimens. Each record includes information on where, when, how, and who collected the specimen.

Because of the urgent need to record information about biodiversity before species go extinct, scientists are enlisting the help of citizen-scientists to identify, count, and evaluate living things within their local areas. Daniel Janzen, a scientist from the University of Pennsylvania, has trained local people to help make an inventory of the biodiversity of Costa Rica.

All the information that is collected goes into an online database. Scientists can use the database to better evaluate the benefits provided by protected areas. Some ways people benefit from these protected areas include tourism, fishing, and bioprospecting. Bioprospecting is the search for living things that could be used to produce valuable new products, such as chemicals that can be used in new medicines.

In October of 2005, the database helped bioprospectors discover two new useful chemicals from plants. Part of the profits from the sale of these chemicals will go to the high tech company that found them. Part of the profits will go towards preserving the biodiversity of Costa Rica.

Source: "Products generate resources for conservation," "Biodiversity in Costa Rica," inbio.ac.cr. Instituto Nacional de Biodiversidad Costa Rica. 29 March, 2006. <<http://www.inbio.ac.cr/en/noticias01.htm#interactive>> <http://www.inbio.ac.cr/en/biod/bio_biodiver.htm>



QUOTE

"The value of biodiversity is more than the sum of its parts."

- Byran G. Norton

Down: 1. biodiversity; 2. ecosystem; 3. genetic.
Across: 4. coral reef; 5. desert; 6. species.

Answers to crossword puzzle