

The Biology Digital Reserve

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PODCAST NUMBER 2: THE ENVIRONMENT

Hello and welcome again to RADIO NUMBER ONE, The Biology Digital Reserve's Podcast service.

This is our second Podcast. The date of this recording is: September 24, 2007.

This podcast has the usual 2 sections: "THE LECTURE" consists of a brief summary of selected topics explained by the biology teacher. The second section is "THE SONG", featuring a surprise melody.

Let's begin THE LECTURE.

The living beings are distributed depending on their HABITATS or the place they live on, and the weather conditions inside or surrounding the habitats. Together, they form an ecosystem. Inside an ecosystem we can find BIOTIC factors, which are all the living beings inside the ecosystem, and the ABIOTIC factors, composed of climatic conditions such as the air or wind, the water or humidity, the sunlight and the temperature, the marine currents, and the atmospheric pressure. The ecosystems' balance is highly dependant on two particular cycles: the water's and the carbon's.

The water cycle begins when sea water is evaporated by the sun; this water steam turns into clouds in the atmosphere and is carried away by winds; this water then falls as rain, hail or snow and is filtered through the ground to reach aquifers or subterranean rivers that conduct the water back to the sea.

In the carbon cycle, living animals produce carbon dioxide during respiration, and this goes into the atmosphere; other carbon dioxide sources are the burning of materials and the decomposition of living beings after they die. This carbon dioxide is taken up by plants, and is transformed to sugars and carbohydrates during the photosynthesis process. Later, when primary consumers or herbivores eat the plants, the sugars are combined with oxygen in the respiration process to produce energy and carbon dioxide, which is released to the atmosphere.

Some researchers like Alfred Wallace and Alexander von Humboldt made trips to several archipelagos to collect several species, and they found a pattern in their distribution. They found out some areas in the planet have more biodiversity, this means, some lands possess more species of plants and animals than others.

Some tropical jungles close to the equator line have more rain and sunlight throughout the year than other places in the world. Because of that, more biodiversity exists in such lands. The American continent has two biogeographical regions: Nearctica and Neotropical. The division

between them is in Mexico; this explains why our country has so many habitats, and this is a cause for the MEGADIVERSITY we possess.

However, we are losing this biodiversity everyday. In the past, humans used to have a relationship with nature based on adoration, respect and protection. However, one day DOMESTICATION took place and the primitive men, who were nomads, progressively became sedentary after they invented the AGRICULTURE technology. Domestication occurs when people take plants or animals along and accustom them to human lifestyle. This domestication is based on ARTIFICIAL SELECTION, where humans select with their own hands what organisms will survive according to their necessities such as feeding and transport, and reasons that are not really necessary such as leisure, like in dog and horse races.

Artificial selection is opposite to NATURAL SELECTION, in which some PRESSURES in the environment select what organisms will survive; in fact, only the stronger and best adapted organisms can survive this selection. These pressures can be the food availability, the presence of predators and the weather conditions.

Adaptations are changes in the body, the functions or the behavior of an organism for resisting the natural selection's pressures. Adaptations occur because of random mutations in the DNA and this is the basis of the EVOLUTION theory described by Charles Darwin. Human beings can be considered as the most evolved species on planet earth. Our most precious adaptations are the precision and power grip granted by the opposable thumb in our hands, the bipedal walking in order to handle things with the hands, and of course, the ability to reason – this reasoning capability turned us into the *Homo sapiens sapiens* subspecies.

Actually, some people hold debates to confront the theory of evolution versus the CREATIONISM, a belief that states all living beings were created by God. Since evolution is based on SCIENCE and EVIDENCE, supported by the fossil findings, and the creationism is based on FAITH, they should not be compared but studied in a separated way. Remember that at school we only study SCIENCE facts, not beliefs.

Let's return to domestication. Following agriculture, settlements took place and men began to trade and produce an economy. Later, during the Industrial Revolution, machines were created and the worker class arose as the base for modern economy. Technology increased and allowed us to make things easier and faster than before; actually, technology is based on science. Science and technology have allowed medical advance such as vaccines, drug treatments, surgeries and prevention techniques that have expanded the human life span to an average of about 75 years for males and females in Mexico.

The society often regulates and debates about whether science and technology is good in certain situations like inventions used for war or for the benefit of humans. The stem cell research is particularly controversial; it allows regeneration of several tissues in humans, but most techniques involve killing and embryo in order to obtain them.

As modern society was constituted, we forgot about our relationship with nature; we produced pollutants and altered the balance in ecosystems; we abused the natural resources by taking down trees without allowing forests to recover from the damage; we transformed the land and fragmented the habitats for constructing our cities; we introduced foreign species from other ecosystems and allowed illegal hunting; we took water from aquifers and subterranean rivers into our cities and returned polluted water to the sea; and we produced harmful CFC molecules that destroyed the ozone layer. We also burned a lot of oil derivatives everyday, such as gasoline, methane and butane which produce enormous quantities of carbon dioxide, a gas that is thought to contribute to the global warming.

Some efforts are being carried on by environmental groups and the society itself, in order to prevent further damage and help the restoration of the balance. The natural reserve and protected natural areas programs stop some privileged ecosystems from being modified by men, and encourage or pay the local inhabitants, the natives, for their help for putting fires off, stop and accuse invaders or illegal hunters, etc.

Remember the SUSTAINABLE DEVELOPMENT: “we generations who are inhabiting the planet must take care of the resources in order for the future generations to enjoy from the same privileges we have today”. Also remember: the GAIA THEORY says the whole planet is a living being – if you harm it, you will harm yourself since YOU are part of it.

So, you must commit and contribute with garbage classification and recycling, avoid introduction of species, you should clean the places you visit and avoid buying things you don't really need and maybe, why not build a green roof atop your home?

This is the end of THE LECTURE.

O.K., here we have the song. This one is dedicated to group 1D, not for the lyrics but for the language spoken in the song. Try to guess the names of the singer and the song, and send your answers to my email address!

Thanks for listening, good bye.