Unit 3

The Diversity of Life

In a time period of one minute, record the names of as many different organisms as you can.

Examine the list of organisms that you have created. How many of these organisms are animals? How many are plants? Are any of the organisms in your list living things other than plants or animals?

When asked to perform this task, many students have a tendency to record the names of common plants and animals. However, a large diversity of many types of organisms exists on earth; many of these are neither plants nor animals.

Because there is such a wide range of different organisms on earth, scientists organize them according to certain characteristics that they have in common.

Think of the large variety of books in a library or the thousands of different items found in a department store. Can you imagine the confusion involved in trying to find a book on a particular subject or an item in a department store if the books or items were not organized?

In both of these cases, the books or the department store, items are grouped into particular areas, and then are further organized within their area. For example, books in a library are grouped into areas such as fiction or non-fiction. Then, each of these, non-fiction for example, are further sub-divided into categories such as pure science, art history, or geography. Finally, each book is labeled with a set of numbers and letters.

This system of organization makes it easy for a library patron to find the books they need and allows the librarian to catalogue and shelve new books.

The job of classifying organisms is such a large one that it has become a science of its own. Taxonomy is the science of classifying organisms.

"BIODIVERSITY" - means biological diversity

- refers to all living organisms in the world, how different they are and how complex they are
- in about 350 BC, Aristotle classified all organisms (living things) into two major groups - the plant kingdom and the animal kingdom
- organisms were placed in the plant kingdom because they were **autotrophic** (could make their own food)
- organisms were placed in the animal kingdom because they were **heterotrophic** (could not make their own food)
- the development of the microscope in the 1600's lead to the discovery of other organisms that were difficult to classify because they did not fit into either of these kingdoms.
  Example: fungi (mushrooms & molds) - these seemed to grow like plants, but they did not have chlorophyll in them to do photosynthesis

- in 1959, a five kingdom system was set up to classify all living organisms: 1. Kingdom Animalia
  2. Kingdom Plantae
  3. Kingdom Fungi
  4. Kingdom Protista
  5. Kingdom Monera

"TAXONOMY" - the science of classification
- tries to group every organism into a certain classification
  Why Classify???? Brainstorm why it is beneficial to have a system of classification.

- there are seven levels of classification: **Kingdom**

    Phylum

    Class

    Order

    Family

    Genus

    Species

"Kings Play Chess On Fine Grain Sand"

- every organism belongs to a species. A **species** is a group of similar organisms that can interbreed and produce fertile offspring under natural conditions. **Example** - grizzly bears and polar bears are two different species since they only breed when in captivity.
- organisms that are grouped in the same kingdom will have some similarities, but may be very different in their appearance. **Example** - elephants and sponges are both in Kingdom Animalia, yet are very different in appearance.

- the more levels of classification that organisms share, the more similar they are
- new species are discovered every year. Because of these taxonomic systems, we can classify these organisms and see what other organisms they are related to.
- Currently there are about 2 million known species, but the numbers continue to increase drastically.

NAMING ORGANISMS:

- the naming system was developed by a Swedish naturalist, Carolus Linnaeus. Linnaeus used Latin as the language for classification because it was very descriptive and not common

and so it could not become mistaken with the common language. **Example** - if we used common names to classify organisms, people in Saskatchewan would think that a gopher is a rodent but people in Florida would think it is a turtle.
⇒**Look up various latin names to find out their meaning**

- common names for organisms caused confusion so each organism was given a scientific name
- the naming system used is known as **binomial nomenclature** (two names) because it names organisms by their genus and species. **Example**: humans are <u>Homo sapiens</u>

                      genus   species

- **RULES** - 1. The genus name is capitalized
          Both parts are italicized or underlined