

Endeavour Hydrothermal Vents: Canada's First MPA

Diversity

Generally, there are three main categories of biological diversity: genetic diversity, species diversity and ecosystem diversity.

(1) **An organism's genetic diversity** is the variation or difference in the amount of genetic information within and among individuals of a population, a species, a group, or a community. Genetic diversity is shown through the amount of similarities and differences in the genetic makeup of individuals, populations and species. These similarities and differences may evolve as a result of many different factors. (ie. heat, light, predation, etc.)

Even though genetic diversity is not always obvious, it is necessary so that organisms can evolve and adapt to changing environments in order to survive.

(2) **Species diversity** is the variation in the number and frequency of species in a biological group or community. The number of species of plants, animals, and microorganisms usually measures the biodiversity of a particular environment. This is why species diversity is the most commonly used synonym for biodiversity, where the number of species in a given habitat is used to measure its biodiversity. (more species = more biodiversity) The diversity of species is mainly important to the ecosystem functioning naturally; therefore, it is considered an indication of the health of an environment. It is estimated that the total number of species on earth is approximately 12.5 million, however the total number that could exist ranges from 50 to 100 million.

(3) **Ecosystem diversity** is the variation in the collection of groups, communities, and habitats within a region. An ecosystem is comprised of all living and non-living things in a particular area. Ecosystems include a combination of animals, plants, microorganism and physical characteristics that define the location. There are a number of new habitats that continue to be discovered and there may be more ecosystems waiting to be found.

In signing the Convention on Biological Diversity, signatory countries agreed to accept the responsibility to protect and understand the abundance of species, genetic materials, habitats, and ecosystems that make up the natural world; develop and maintain biological resources, to recognize each nation's authority over the biodiversity found in its territory, and to correct the imbalance between who benefits and who pays for protecting biodiversity.