**TD1: CHAPTER 1**

**1.Definition :**

**1-1- Ecology:** The word "ecology" was coined in 1866 by the German biologist Ernst Haeckel, derived from two Greek words: \*oikos\*, meaning house or habitat, and \*logos\*, meaning science. Ecology thus appears as the science of habitat, studying the conditions of existence of living beings and the various interactions that exist between these living beings and their environments.

**1-2- Biocoenosis:** A group of living beings (zoocoenosis, phytocoenosis, microbiocoenosis, mycocoenosis...) coexisting in a given space.

**1-3- Biotope (ecotope):** A environment defined by its stable physicochemical characteristics and hosting a community of living beings, the "biocoenosis."

**1-4- An ecosystem :** is, by definition, a system, meaning a set of elements interacting with each other. It is a biological system formed by two inseparable elements: \*\***the biocoenosis**\*\* and \*\***the biotope**\*\*.

**1-5- Ecological factor:** An "ecological factor" is any element of the environment that can directly affect living beings.

Ecological factors are of two types:

* **Abiotic factors:** The set of physicochemical characteristics of the environment, such as climatic factors (temperature, rainfall, light, wind...), edaphic factors (soil texture and structure, chemical composition...).
* **Biotic factors:** The set of interactions that exist between individuals of the same species or different species: predation, parasitism, competition, symbiosis, commensalism, etc.

**2- Areas of Study**:

Ecological studies conventionally focus on three levels:

- An \*\***individual**\*\* is a specimen of a given species.

- A \*\***population**\*\* is a group of individuals of the same species occupying a particular territory at a given time.

- A \*\***community**\*\* or \*\***biocoenosis**\*\* is the set of populations in the same environment, including animal communities (zoocoenosis) and plant communities (phytocoenosis) that live under the same environmental conditions and in proximity to each other.

Each of these three levels is the subject of a branch of ecology:

- The individual concerns **autecology**: This is the science that studies the relationships of a single species with its environment. It defines the tolerance limits and preferences of the studied species regarding various ecological factors and examines the influence of the environment on morphology, physiology, and ethology.

- The population concerns **population ecology** or **population dynamics**: This is the science that studies the qualitative and quantitative characteristics of populations: it analyzes variations in the abundance of various species to identify their causes and, if possible, predict them.

- The biocoenosis concerns **synecology**: This is the science that analyzes the relationships between individuals belonging to various species within the same community and their interactions with their environment.

**An ecological niche**: is the role and position a species occupies within an ecosystem. The term refers to both the habitat of the species and its trophic role (diet).

* **Fundamental ecological niche:**

"The set of environmental conditions under which a species, in the absence of competitors, can form viable populations."

* **Realized ecological niche**:

"The set of environmental conditions under which a species, in the presence of its competitors, can form viable populations."