

## **TD1: Sampling Reminders and basic concepts**

### **1 Sampling Unit**

An elementary concept of sampling theory, namely the minimum unit of observation from which information about useful variables will be obtained. In statistics, the symbol "N" is used to denote the number of sampling units that make up the Universe, and "n" is used to denote the number of individuals in the considered sample.

### **2-Sample**

The sample is a collection of elements taken from the statistical population (the part of the population that will be examined) according to a random process or a method known as purposive sampling. It is a fragment of a set to judge that set.

### **3-Statistical population**

A statistical population is a collection of elements, possessing at least one common characteristic that allows it to be defined, from which a representative sample is drawn and on which statistical conclusions are based.

### **4-Target population**

A larger set from which the statistical population is extracted. It is generally the biological population that includes, in addition to the available population, the inaccessible and non-vulnerable population.

### **5-Variable**

Characteristic measured or observed on each element of the sample (specific variables: number of individuals, mass, etc.) or on predefined entities related to the sampling units (associated variables: distance to the nearest dwelling, ambient temperature, etc.).

### **6-Parameter**

Quantitative characteristic that allows a condensed representation of the information contained in one or more data sets. It is a mathematical concept (mean, standard deviation, diversity...).

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## **7-Estimator**

An estimator is a mathematical expression that measures, based on sample data, a parameter of the statistical population. Thus, for simple random sampling,  $\bar{y} = \sum y_i / n$  is an estimator of the population mean  $\mu$ . Example:  $\bar{y} = 48$  larvae/ladle (calculated from a sample of 50 collections).

## **8-Ecological descriptors and sampled variables**

The variables we choose to study are generally called ecological descriptors; however, it is very common in statistical ecology to retain the term variable, which can be qualitative (and in this case, have several modalities) or quantitative:

### **a) Qualitative descriptors**

Distinct achievements are categories defined without assigning a measure or even a characteristic that would allow them to be ordered relative to each other. We are talking about qualitative variables with different categories, the number of categories being different depending on the variables.

### **b) Semi-quantitative descriptors**

Ordinal descriptors are defined by the existence of an order relation (smaller or larger; or earlier or later, etc.) without the possibility of measuring a distance between two distinct states. (Example: age group).

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### **c) Quantitative descriptors**

They are defined as true quantities, for which ratios and differences can be determined. This definition applies to a very large number of descriptors used in ecology that measure abundances, masses, frequencies, quantities of energy, and quantities of information.