# TD2: Study of Flora: the Braun Blanquet Method

## I. Reminders

Sigmatist phytosociology, or Braun-Blanquet-Tüxenian phytosociology, is the science of plant communities, that is, syntaxa.

*__Adjective coined by Egler (1954),__ acronym for the International Station of Mediterranean and Alpine Geobotany, which was directed by Braun-Blanquet in Montpellier, but also from the Greek letter sigma (Σ), used to signify "sum," which carries both a methodological indication and a school affiliation.

*__Syntaxon =__ phytosociological unit of classification at any hierarchical level and also systematic unit for classifying association individuals (Rameau, 1985).

It is based on the following postulate: the plant species, and even better the plant association, are considered the best integrators of all ecological factors (climatic, edaphic, biotic, and anthropic) responsible for the distribution of vegetation.

The objective of phytosociology is the description and understanding of vegetation, the bidimensional spatial and temporal organization, on the qualitative and quantitative levels of the plant species that constitute it.

In the field, the phytosociologist chooses the location of their surveys according to two successive levels of perception:

**A first vision** at the landscape scale leads him to choose the major, significant, representative, and repetitive elements of the plant landscape (plant formations) that he wants to study;

**A second vision** within the chosen landscape element will guide the selection of the survey location and its boundaries.

**Three conditions are required for the completion of a survey:**

**1)** Adequate dimensions to contain a sample of representative species of the community;

**2)** Uniformity of the habitat, the survey will not extend into two different habitats.

**3)** Homogeneity of the vegetation, by only including a successional stage or a dynamic phase; there are statistical tools to test the homogeneity of the vegetation.

It is customary to analyze the entire vegetation, including, if applicable, woody, herbaceous, and moss plants.

## II. Minimum Phytosociological Area

The search for the minimal phytosociological area meets the first condition. The concept of the minimum area is designed as the area where almost all species of the plant community are represented. A classic approach is based on the "nested surfaces method."

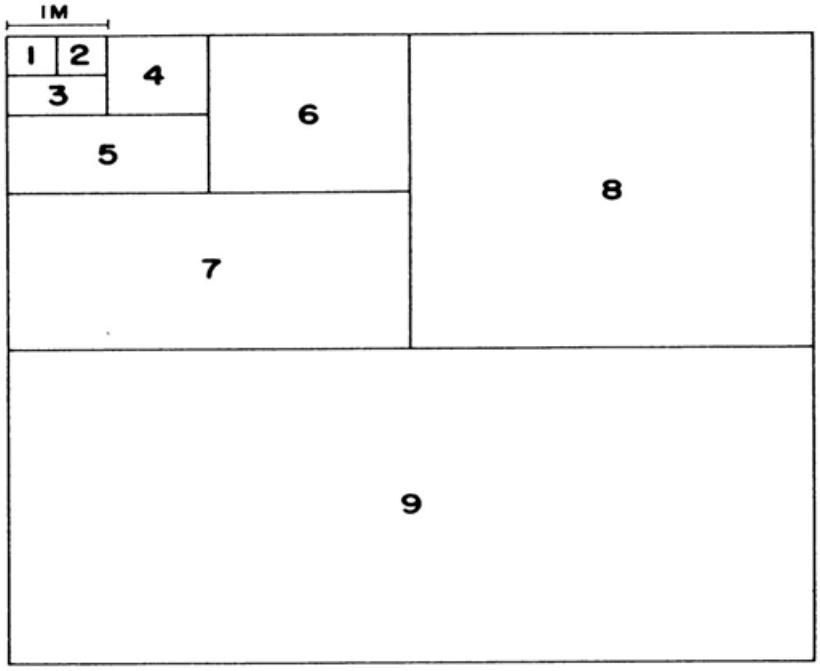


**Figure 1:** Nested surface system to determine the minimum area

Each plot numbered from 1 contains the area of the previous plot. Thus, the odd plots are square and the even plots are rectangular.

The nested quadrat method has the disadvantage of overestimating rare species if they were encountered in the first quadrat. In this case, they will appear in all subsequent quadrats. A statistically more correct method would be to use increasingly larger quadrats randomly placed within the community, without the smaller quadrats being systematically included within the larger ones. It would then be possible to obtain an average

number of species for each quadrat size and a variance. However, such a device is much more difficult to implement in the field and has, therefore, been very rarely used.

Despite its imperfections, the method can serve as a guide and help quickly get an idea of the minimum surface below which one should not go down if one wants to have a chance of covering a surface equal to the minimum area.

Here are some orders of magnitude that can be used to make floristically homogeneous surveys:

- Forests with shrub layer: 200–500 m2
- Understory alone: 50–200 m2
- Lawns: 50–100 m2
- Prairie: 10–25 m²
- Grazing: 5–10 m²
- Community of "weeds" in crops: 25–100 m²
- Musical community: 1–4 (0.1–0.4) m²
- Lichen community: 0.1–1 m².

One must not lose sight of the fact that the size of the quadrat is one of the essential components of sampling in ecology. The issue of the minimum area must be carefully examined before any field data collection campaign.

## III. Composition of a statement

The statement includes three categories of information:

- **Geographical:** date, locality, coordinates (possibly by GPS), altitude, slope, exposure
- **Environmental:** lithology, drainage, humidity, humus, soil, pH, biotic factors (browse by game, defoliation, etc.), microclimate
- **Specific, or floristic**: list of plant species, possibly based on the stratification of individuals, with quantitative indications of abundance, coverage, biomass, or simply qualitative indications of presence.