



TP1 : MEIP



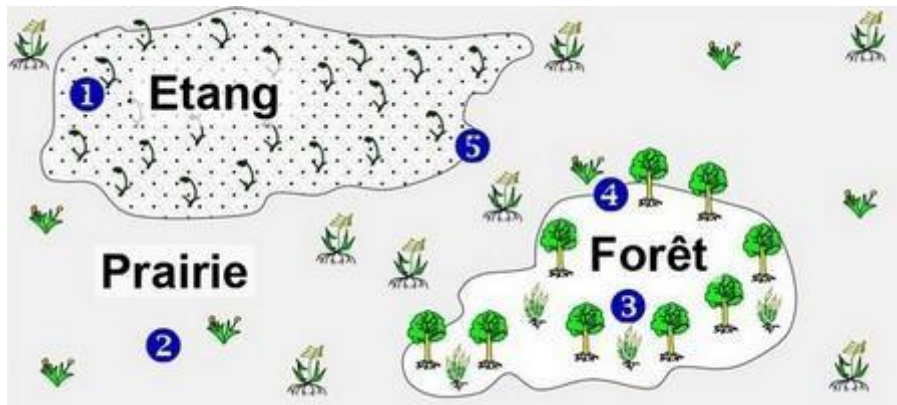
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I- Statistical study of plants

1-1/ Choice of the station

The station where we need to conduct surveys must be located far from the boundary separating two different environments.



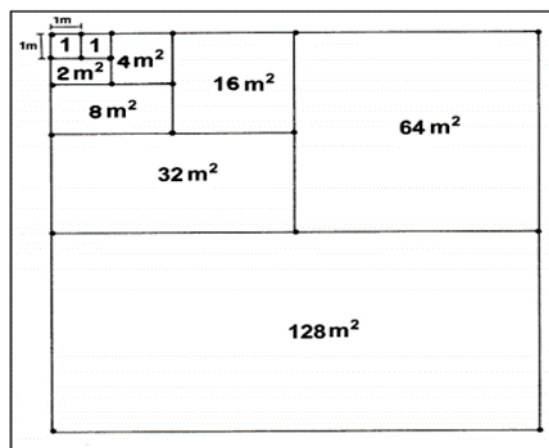
So the surfaces where we need to conduct the surveys are 1, 2, and 3, because these stations are homogeneous, whereas stations 4 and 5 are heterogeneous.

Given the difficulty of studying the entire space of a station, we resort to the notion of minimal area.

1-2 / Determination of the minimum area

To determine the minimum surface area of the plots to be studied, we create a grid.

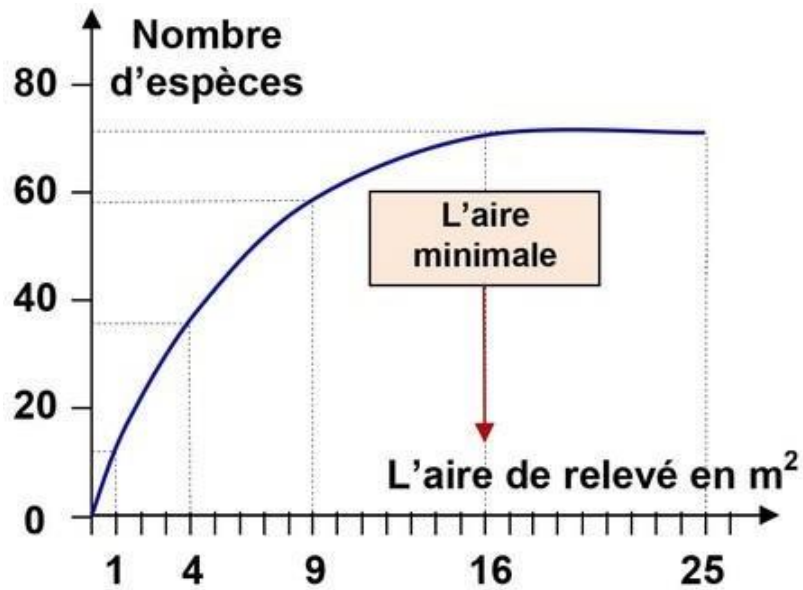
This allows us to count all the plant species present on 1m^2 , then on 2m^2 , 4m^2 , 8m^2 , etc., until we no longer find any new plant species.



The following table indicates the number of species recorded in squares.

The survey area in m^2	1	4	9	16	25
The number of plant species	11	38	59	71	71

Once these surveys are completed, a curve is established, where the number of species found is plotted against the area explored:

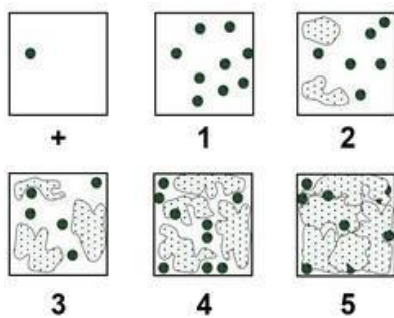


1-2 / Exploitation of Abundance-Dominance survey data

The **abundance** of a plant species represents the number of individuals of the same species per unit area.

Dominance or coverage: represents the area covered by all the individuals of a given species, it is estimated by the vertical projection of their aerial vegetative organs onto the ground.

The abundance-dominance coefficient was created by Braun-Blanquet, it highlights the relationship between the two criteria: abundance and dominance:



Coefficients	Abondance	Recouvrement
+	Très rare	Très faible
1	Rare	< 5%
2	Répondue	Entre 5-25%
3	Abondant	Entre 25-50%
4		Entre 50-75%
5		> 75%

Frequency and frequency index

The frequency (F): is a percentage that expresses the degree of the connection of a species to the environment, It is represented by the formula:

$$F = (n/N) \times 100$$

n: Number of surveys containing the studied species

N: Number of surveys conducted

The researcher **DU RIETZ** divided the frequencies into 5 classes, each corresponding to a frequency index and characterizing the plant type:

Categories	Frequency Index (FI)	Nature of the plant species
$F < 20 \%$	I	Accidental
$20 \% \leq F < 40 \%$	II	Accessory
$40 \% \leq F < 60 \%$	III	Fairly frequent
$60 \% \leq F < 80 \%$	IV	Frequent
$80 \% \leq F \leq 100 \%$	V	Very frequent

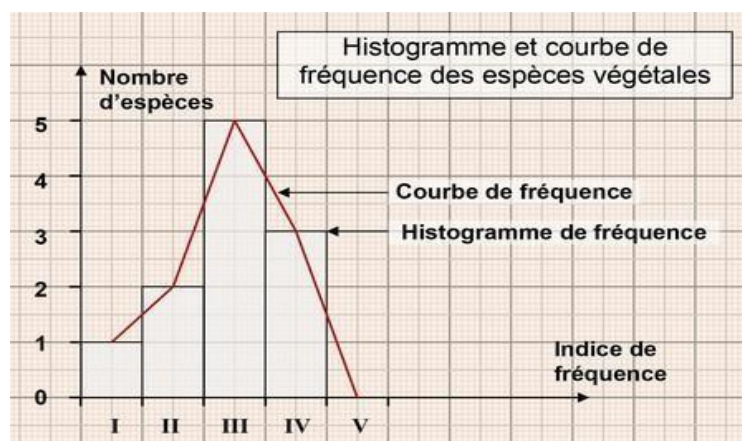
Example of a study in a forest environment

The following table represents the results of the study of plants (the flora) in a forest environment (The + sign indicates the presence of the species in the survey):

Les relevés Les espèces	R ₁	R ₂	R ₃	R ₄	R ₅	R ₆	F (%)	IF
Fougère aigle	+	-	-	+	+	-		
Bouleau blanc	+	+	+	-	+	-		
Bouleau pubescent	-	+	+	+	+	-		
Châtaigner	-	-	+	+	+	+		
Chêne	+	-	+	+	-	-		
Saule	+	-	-	+	-	+		
Aulne	-	+	-	+	-	+		
Jonc	-	+	-	-	+	+		
Pin sylvestre	+	-	-	-	+	-		
Bruyère tétralix	-	-	-	-	+	-		
rumex	-	+	-	-	+	-		

Les relevés Les espèces	R ₁	R ₂	R ₃	R ₄	R ₅	R ₆	F (%)	IF
Fougère aigle	+	-	-	+	+	-	$(3/6) \times 100 = 50$	III
Bouleau blanc	+	+	+	-	+	-	$(4/6) \times 100 = 66.66$	IV
Bouleau pubescent	-	+	+	+	+	-	$(4/6) \times 100 = 66.66$	IV
Châtaigner	-	-	+	+	+	+	$(4/6) \times 100 = 66.66$	IV
Chêne	+	-	+	+	-	-	$(3/6) \times 100 = 50$	III
Saule	+	-	-	+	-	+	$(3/6) \times 100 = 50$	III
Aulne	-	+	-	+	-	+	$(3/6) \times 100 = 50$	III
Jonc	-	+	-	-	+	+	$(3/6) \times 100 = 50$	III
Pin sylvestre	+	-	-	-	+	-	$(2/6) \times 100 = 33.33$	II
Bruyère tétralix	-	-	-	-	+	-	$(1/6) \times 100 = 16.66$	I
rumex	-	+	-	-	+	-	$(2/6) \times 100 = 33.33$	II

The histogram and the frequency curve:



We observe that the frequency curve is **unimodal** (a single maximum value), so the studied readings belong to a **homogeneous** plant grouping.

EXERCISE 1 :

Document 10 : Relevés des végétaux dans une forêt								
Les espèces végétales	Relevés	R ₁	R ₂	R ₃	R ₄	R ₅	R ₆	F% IF
Fougère aigle		+	+	+	+	+	+	
Bouleau blanc		+	+	+	+	+	-	
Bouleau pubescent		-	+	+	+	+	+	
Châtaigner		-	-	+	-	+	+	
Chêne		+	-	+	+	-	-	
Saule		+	-	-	-	-	+	
Aulne		-	-	-	+	-	+	
Jonc		-	+	-	-	+	-	
Pin sylvestre		+	-	-	-	+	-	
Bruyère tétralix		-	-	-	-	+	-	
Rumex		-	+	-	-	+	-	

1. **Compléter** le tableau ci-dessus en **calculant** la fréquence %F et l'indice de fréquence I de chaque espèce végétale.
2. **Réaliser** l'histogramme et la courbe de fréquence. Que pouvez vous **deduire** à propos de l'homogénéité des associations végétales des relevés.