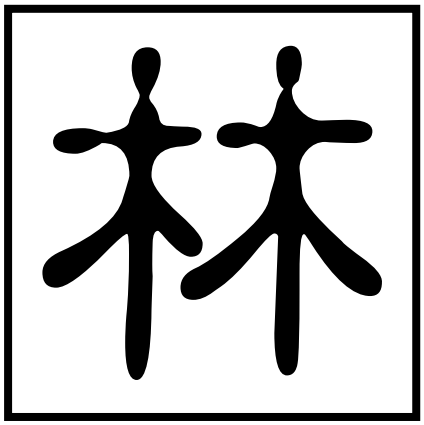

Woodland Ecosystem

Version 1.1

Objectives

1. To contrast the vegetation characteristics of the selected field sites.
2. To study the micro-climate variations in the study area.

Equipment List

Feild Work

	Items	Qty.		Checked	Returned
1.	Abney level	x	2	❑	❑
2.	Adhesive labels	x	1	❑	❑
3.	Anemometer	x	1	❑	❑
4.	Base Map (Individual)	x	1	❑	❑
5.	Clipboard (Individual)	x	1	❑	❑
6.	Compass	x	4	❑	❑
7.	Cotton gloves	x	4	❑	❑
8.	Deionised water (Wash bottle)	x	1	❑	❑
9.	Ditigal Thermohygrometer	x	1	❑	❑
10.	Field Study Handbook	x	1	❑	❑
11.	Forceps	x	2	❑	❑
12.	Light Meter	x	1	❑	❑
13.	Magnifying glass	x	2	❑	❑
14.	Measuring tape - 3.5 m	x	1	❑	❑
15.	Measuring tape - 6 feet	x	1	❑	❑
16.	Measuring tape - 30 m (Transect line)	x	2	❑	❑

FIELD WORK

F1 Vegetation

Tree

1. Run a 10 m long transect line across an area which is best represent the woodland.
2. Trees which touch or have their perpendicular crown projections overlying the transect line, should all be included.
3. Try to distinguish the different tree types lie along the transect and measure the followings by using the abney level and measuring tapes provided:
   a. corresponding position on the transect line (P)
   b. tree height (H)
   c. crown width (W)
   d. circumference of tree trunk at breast height (C)
4. Observe whether climbers are present or not.
5. Record the data in Table 5.2 or 5.3.
6. If you find difficulties in measuring the tree height, refer to Figure 5.2.

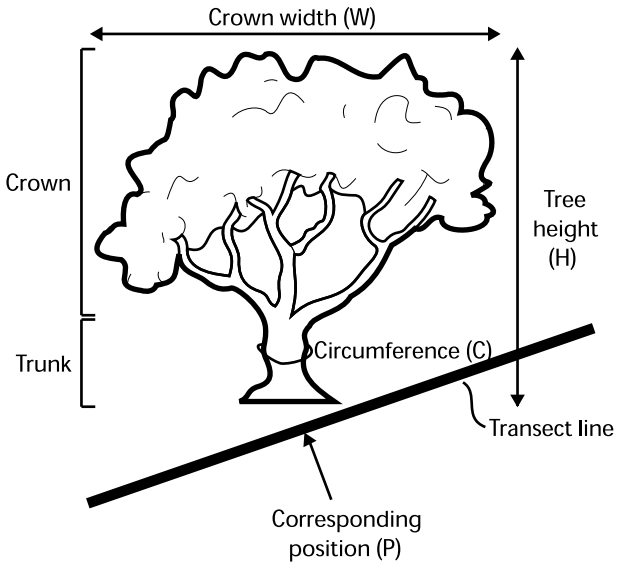

Figure 5.1 - Tree

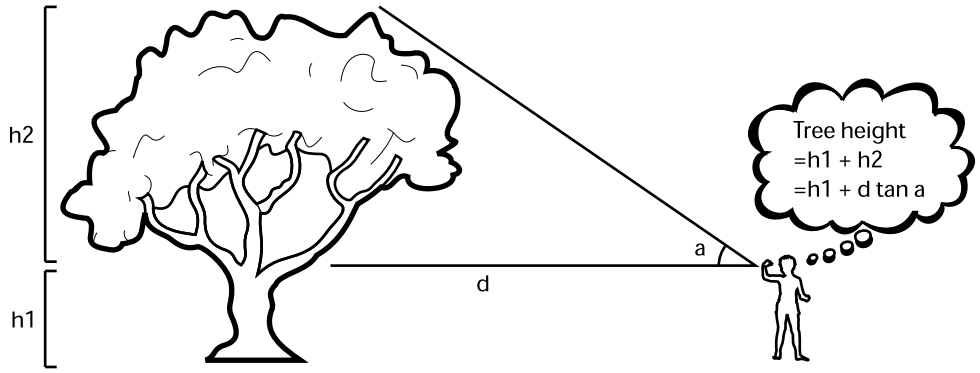

Figure 5.2 - Calculation of tree height

Shrubs and Saplings

1. Measure the height and corresponding positions of all shrubs and saplings which touch or lie on the transect line.
2. Distinguish the different species and record the data in Table 5.4.

Undergrowth

1. All herbs, grasses, ferns, mosses, fungi and other lower plants touching or lying on the transect line should be included and recorded in Table 5.5.
2. For herbs, grasses and ferns, count their numbers in 0.5 metre cluster and locate their positions on the transect line.
3. For mosses, fungi and lichens, briefly describe their characteristics and the niches where they grow.

F2 Micro-climate

1. Use light meter to measure the light intensity:
   (a) above the canopy layer, and
   (b) below the canopy layer.
2. Use digital thermohygrometer to measure the temperature and relative humidity:
   (a) above the canopy layer, and
   (b) below the canopy layer.
3. Use anemometer to measure the average wind speed inside and outside the woodland.
4. Fill in Table 5.6.

Figure 5.4 - Stratification of woodland

Data Sheet

Group: _____ Site: _____

Date: _____ Time: _____

Recent weather condition: _____

_____

Table 5.1 - General Description

	Woodland 1	Woodland 2
Aspect		
Altitude		
Area		
Surrounding environment		
No. of stata		

Table 5.2 - Tree Data (Woodland 1)

	Tree name	Position (P)	Distance (d)	Elevation Angel (a)	Tree height (H)	Crown width (W)	Circum-ference (C)	Climbers (Y or N)
1.								
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								
11.								
12.								
13.								
14.								
15.								
16.								
17.								
18.								
19.								
20.								
21.								
22.								
23.								
24.								
25.								
26.								
27.								
28.								
29.								
30.								

Table 5.3 - Tree Data (Woodland 2)

	Tree name	Position (P)	Distance (d)	Elevation Angel (a)	Tree height (H)	Crown width (W)	Circum-ference (C)	Climbers (Y or N)
1.								
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								
11.								
12.								
13.								
14.								
15.								
16.								
17.								
18.								
19.								
20.								
21.								
22.								
23.								
24.								
25.								
26.								
27.								
28.								
29.								
30.								

Summary

	Woodland 1	Woodland 2
No. of speces		
Average height		
Average truck circumference		
Average crown width		
Name of the abundant species		

Table 5.4 - Shrubs and Saplings Data

Woodland 1				Woodland 2			
	Name of shrubs & saplings	Position (P)	Height (H)		Name of shrubs & saplings	Position (P)	Height (H)
1.				1.			
2.				2.			
3.				3.			
4.				4.			
5.				5.			
6.				6.			
7.				7.			
8.				8.			
9.				9.			
10.				10.			
11.				11.			
12.				12.			
13.				13.			
14.				14.			
15.				15.			
16.				16.			
17.				17.			
18.				18.			
19.				19.			
20.				20.			
21.				21.			
22.				22.			
23.				23.			
24.				24.			
25.				25.			
26.				26.			
27.				27.			
28.				28.			
29.				29.			
30.				30.			

Summary

	Woodland 1	Woodland 2
Total no. of individuals		
Total no. of species		
Average height		
Name of the abundant species		

Table 5.5 - Herbs Data

Woodland 1				Woodland 2			
	Name of herbs	Position (P)	Number (N)		Name of herbs	Position (P)	Number (N)
1.				1.			
2.				2.			
3.				3.			
4.				4.			
5.				5.			
6.				6.			
7.				7.			
8.				8.			
9.				9.			
10.				10.			
11.				11.			
12.				12.			
13.				13.			
14.				14.			
15.				15.			
16.				16.			
17.				17.			
18.				18.			
19.				19.			
20.				20.			
21.				21.			
22.				22.			
23.				23.			
24.				24.			
25.				25.			
26.				26.			
27.				27.			
28.				28.			
29.				29.			
30.				30.			

Summary

	Woodland 1			Woodland 2		
	Average height (H)	Frequency* (F)	No. of species (S)	Average height (H)	Frequency* (F)	No. of species (S)
Herbs, grasses, and ferns						

* Frequency = Total Number

Table 5.6 - Micro-climate Data

		Woodland 1			Woodland 2		
		(1)	(2)	(3)	(1)	(2)	(3)
Light Intensity (LUX)	Above canopy layer						
	Below canopy layer						
Temperature (°C)	Above canopy layer						
	Below canopy layer						
Relative Humidity (%)	Above canopy layer						
	Below canopy layer						
Wind Speed (m/s)	Inside woodland						
	Outside woodland						

Data Processing

1. Complete all the data sheets and summaries.
2. Draw appropriate graphs and diagrams to show the findings in the micro-climate data.
3. Draw profiles of the two different woodlands.

Discussion

1. Compare and contrast the light intensity between the two woodlands. Explain.

2. Compare and contrast the temperature between the two woodlands. Explain.

3. Compare and contrast the relative humidity between the two woodlands. Explain.

4. Compare and contrast the wind speed between the two woodlands. Explain.

5. Compare and contrast the chacteristics of trees between the two woodlands. Explain.

6. Compare and contrast the chacteristics of shrubs and saplings between the two woodlands. Explain.

7. Compare and contrast the chacteristics of undergrowth between the two woodlands. Explain.

8. Are the two woodlands of the same type of ecosystem? Why?