Woodland Ecosystem

Enquiry Skills Approach
Half-day Course, Version 1.1

A. Planning and Preparation

Module

Disappearing Green Canopy

Enquiry Question

Hypothesis 1 : ***Natural woodlands have higher biodiversity than man-made woodlands.***
Hypothesis 2: ***The light intensity inside woodland is lower than that outside woodland.***

Key Concepts

Ecosystem	Biotic component	Tree	Undergrowth	Tree crown
Biodiversity	Abiotic component	Young tree	Climber	Light Intensity

Scope of the Study

Ho Koon Centre

Think About

Suggest the most appropriate weather condition and time to collect data, justify your answer.

List the safety risks when conducting woodland fieldwork.

Field Work Plan

Select a representative part of the woodland, set up a transect with measuring tape (5m or 10m long).

Vegetations

1. All specific plants (trees, young trees and undergrowth) touch or their perpendicular projections overlying the transect should be recorded.
2. Try to distinguish different tree types that lie along the transect and measure the followings by using the abney level and measuring tapes provided: (refer to Figure 1 & 2)
   a. corresponding position on the transect line (P),
   b. tree height (H),
   c. crown width (W), and
   d. circumference of tree trunk at breast height (C).
3. Observe whether climbers are present or not.
4. Record the data in Table 1.
5. For undergrowth, mark down their number of species and locate their positions on the transect line.
6. Record the data in Table 2.

Figure 1: Tree

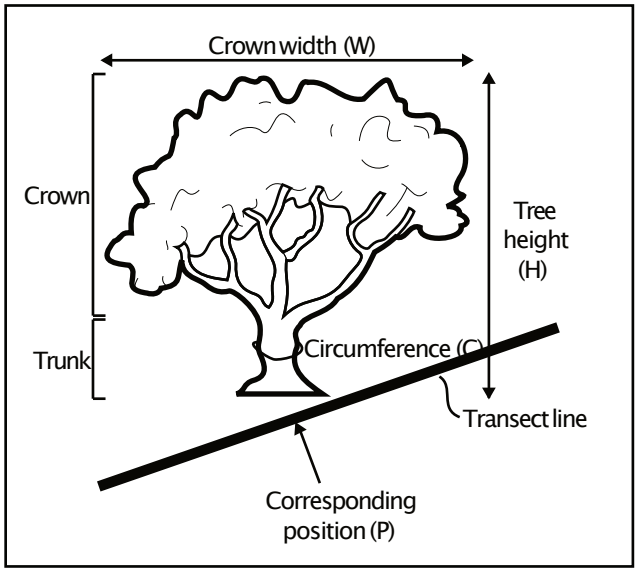
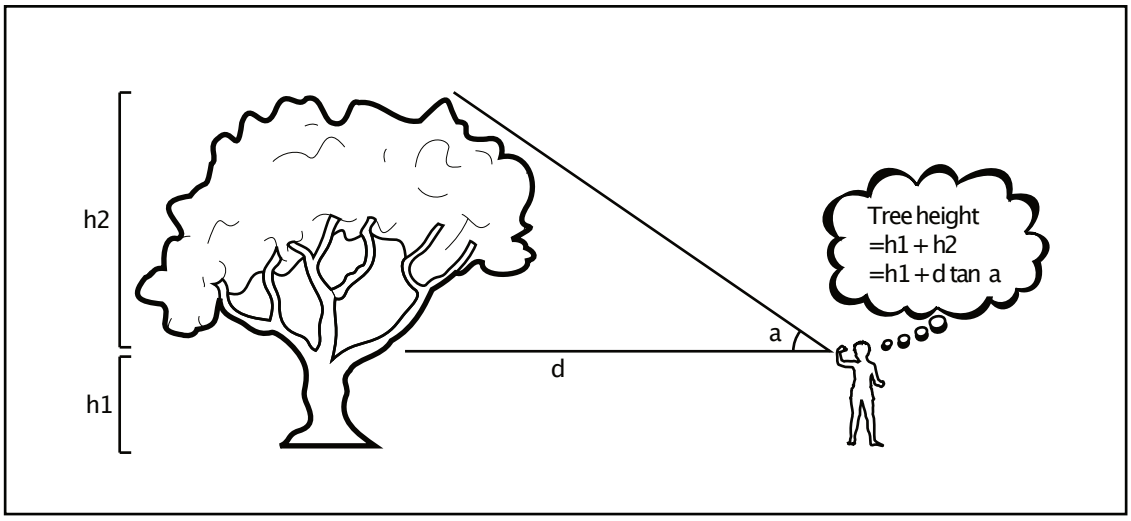


Figure 2: Measuring tree height



Litter

1. Select an area along the transect line, then put a 0.5 X 0.5 m quadrat on the area.
2. Collect all the litter within the quadrat and put them into a plastic bag.
3. In order to protect your hands from aggressive invertebrates, wearing cotton gloves is highly recommended.
4. Investigate the litter and record the data in Table 3.

Light Intensity

1. Choose an appropriate sampling method to select sampling points inside the woodland.
2. Select sampling points outside the woodland.
3. Use light meter, measure the light intensity (1m above ground) every 5-minute within 20 minutes.
4. Record the data in Table 5.

B. Data Collection

Complete the following table.

Primary Data Items	To Examine Hypothesis		Data Collection Method			Equipment Required (Number on the Equipment Checklist)
	1	2	Observation	Counting	Measuring	
1. Plant position						
2. Tree height						
3. Crown width						
4. Circumference						
5. Climbers						
6. Undergrowth						
7. Litter						
8. Light intensity						

Think About

Name the sampling methods adopted in fieldwork, and list their advantages.

Equipment Checklist

Items	Quantity	Checked	Returned
1. Abney level	x 1	❑	❑
2. Cotton gloves	x 1	❑	❑
3. Light meter	x 1	❑	❑
4. Measuring tape - 3.5m	x 1	❑	❑
5. Measuring tape - 30m	x 1	❑	❑
6. Quadrat	x 1	❑	❑
7. Plastic bag	x 1	❑	❑

Think About

List the possible errors when collecting data.

Data Recording sheet

Table 1: Summary (Trees & Young Trees)

	Total No. of Individuals	Total No. of Species
Natural Woodland		(a)
Man-made Woodland	(estimated)	(estimated) (b)

Table 2: Summary (Undergrowth)

	Total No. of Individuals	Total No. of Species
Natural Woodland		(c)
Man-made Woodland	(estimated)	(estimated) (d)

Table 3: Litter

	Weight (g)	No. of Species (Vegetations)	No. of Species (Animals)
Natural Woodland			(e)
Man-made Woodland			(f)

Table 4: Summary (Woodlands)

	Total No. of Species (Vegetations & Animals)
Natural Woodland	(a) + (c) + (e)
Man-made Woodland	(b) + (d) + (f)

Table 5: Light Intensity

	Total Average of Light Intensity
Outside Woodland	Lux
Inside Woodland	Lux

C. Data Processing, Presentation and Analysis

Draw appropriate diagrams with graph papers, to show the data in Table 1, 2 and 5.

Diagrams appropriate for showing the data include:

a. _____

b. _____

Think About

List the merits and demerits of the chosen diagrams.

D. Interpretation and Conclusion

1. Does the fieldwork result support the Hypothesis 1: ***Natural Woodlands have higher biodiversity than man-made woodlands***? Support your conclusion with the collected data and graph.
   (Extended question: Why is there higher biodiversity in natural woodlands?)

2. Does the fieldwork result support the Hypothesis 1: ***The light intensity inside woodland is lower than that outside woodland***? Support your conclusion with the collected data and graph.
   (Extended question: Why is there lower light intensity inside woodland?)

E. Evaluation

1. Other than the data collected in this course, suggest other enquiry question, data and information you might needed for a fieldwork in the field site. Explain your answer.

Further Reading

The Relief of China