

Investigate the effect of

The nature of slope on the area occupied by lichen

Group 4 :

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Introduction

- ▶ 6 major types of slopes in Tai Po Kau
- ▶ Focus on **3 types**
 - ▶ ***Boulders embedded in soil***
 - ▶ ***Smooth cement surface***
 - ▶ ***Rock surface***

Introduction

- ▶ 3 main types of lichens

- ▶ Foliose Lichen (葉狀地衣)



- ▶ *Crustose Lichen** (殼狀地衣)



- ▶ Fruticose Lichen (枝狀地衣)



- ▶ **the only one we focus on*

Introduction

- ▶ Independent variable : Natures of slope
- ▶ Dependent variable : Area occupied by lichen
- ▶ Controlled variables :
 - ▶ Light intensity , Temperature , Humidity , Wind speed , Gradient ,
- ▶ *Assumption : Collected data of controlled variables being very similar are considered as the same ; Direction of the slope is not significant.

Methodology

- ▶ Date : 2nd June , 2011
- ▶ Time : 13:45 - 15:45
- ▶ Venue : Tai Po Kau Nature Reserve
- ▶ Carry out **Field Work** !!

Methodology - apparatus

- ▶ Light meter x1
- ▶ Anemometer x1
- ▶ Digital thermometer x1
- ▶ Quadrat x1
- ▶ Forestry x1
- ▶ Plastic mini grid quadrat x1



Methodology

▶ Procedure :

- ▶ 1. Find **3 slopes with different natures**
(*boulders embedded in soil , smooth cement surface & rock surface*)
- ▶ 2. Set 2 **quadrats**(50cm x 50cm) on each slope.
- ▶ 3. Use **plastic mini-quadrat** (1cm x 1cm for each square) to measure the area occupied by **Crustose lichen**

Methodology

- ▶ Procedure :

- ▶ 4. Calculate the **percentage cover** by lichen for each slope

- ▶ $(\text{no. of squares occupied} / 2500) \times 100\% = \text{Percentage Cover}$

- ▶ 5. **Compare** the percentage covers calculated

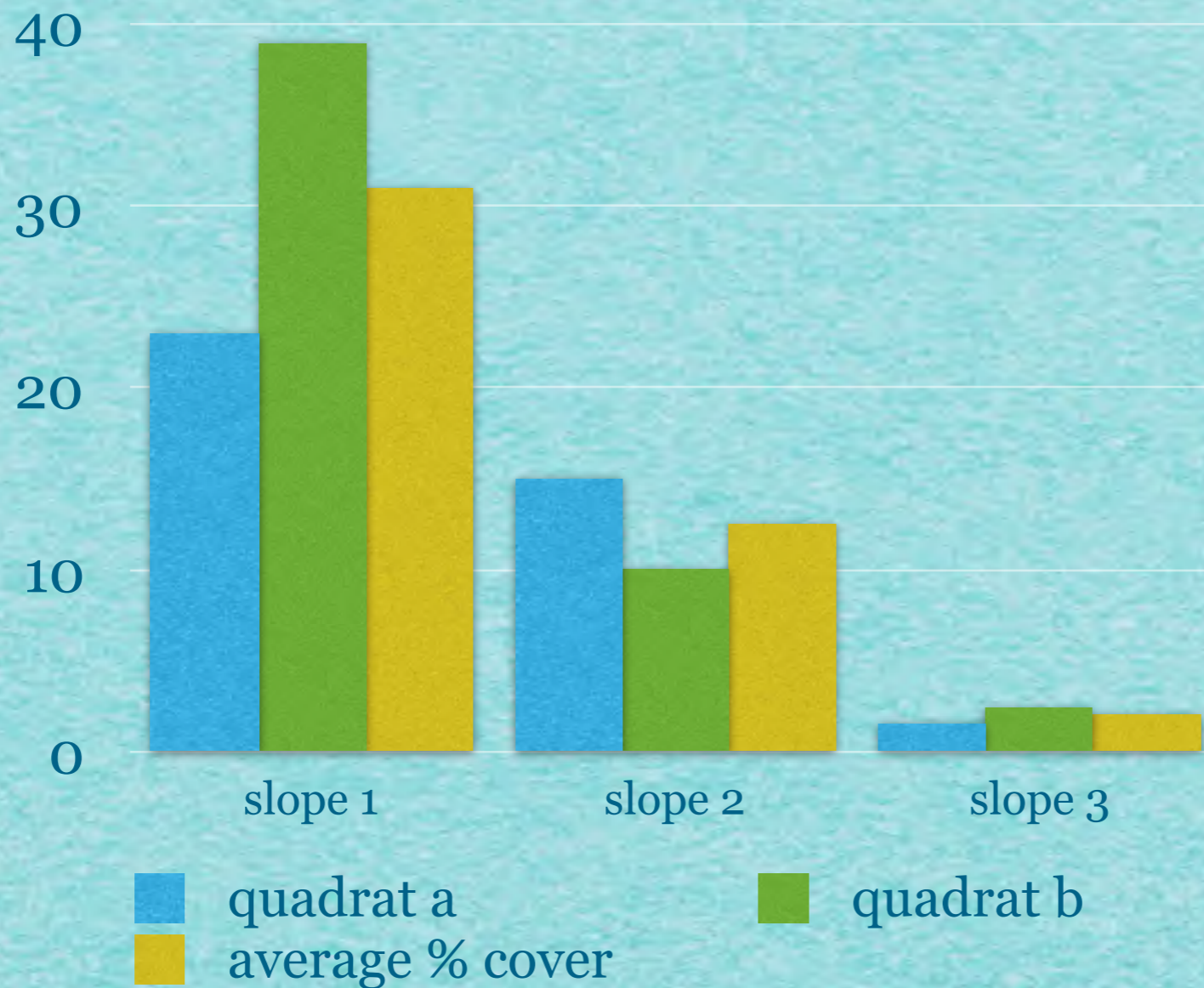
Results

| * Slope | 1 | | 2 | | 3 | |
|--------------------|----|----|------|----|-----|-----|
| Quadrat | 1a | 1b | 2a | 2b | 3a | 3b |
| Percentage cover | 23 | 39 | 15 | 10 | 1.6 | 2.4 |
| Average percentage | 31 | | 12.5 | | 2 | |

- * Slope 1 = boulders embedded in soil
- Slope 2 = smooth cement surface
- Slope 3 = rock surface

Results

Percentage cover of Crustose Lichen in different slopes



Discussion - analysis

- ▶ Comparing the three habitats,
- ▶ lichen occupies the most space in '**Boulders embedded in soil**' condition, followed by '**Smooth cement surface**' and then '**Rock surface**'.
- ▶ Most adaptive to slope 1 type condition.

Discussion-analysis

| | Site 1 | Site 2 | Site 3 |
|-----------------------|--------|--------|--------|
| Slope(°) | 63 | 57 | 67 |
| Temperature (°C) | 29.5 | 29.9 | 29.6 |
| Relative Humidity (%) | 81 | 82 | 89 |
| Wind Speed (m/s) | 0.4 | 0.7 | 0 |
| Light Intensity (lux) | 3170 | 3150 | 1650 |

Discussion - limitation & errors

- ▶ Limitation :
 - ▶ Age of slopes cannot be found
 - ▶ Time allowed is limited.
Not enough for repeat sampling
- ▶ Errors :
 - ▶ Hard to identify lichen from mosses
 - ▶ Rough estimation of the area required

Discussion-improvement

- ▶ Increase the time for investigation.
- ▶ Increase the ability to identify lichen
- ▶ Use a plastic mini-grid quadrat of smaller squares

Conclusion

- ▶ Lichen is more adapted in '**Boulders embedded in soil**' slope than in '**Smooth cement surface**' and '**Rock surface**' slope.

References

- ▶ 1. Field Study Handbook (Vor YIU.etc , Sept, 2009)
- ▶ 2. 大埔滘常見斜坡動物和植物 1
- ▶ 3. <http://en.wikipedia.org>
- ▶ 4. <http://hk.image.search.yahoo.com>

* THE END *

- ▶ *Q&A Period !!*
- ▶ *Do you have any questions ??*