

# Biology field trip report

Group 3

Investigation on the abundance  
and diversity of plant in natural  
and artificial slope

# Slope?

- ◆ Artificial slope
  - ◆ Man-made slope , usually by concrete or cement
- ◆ Natural slope
  - ◆ Slope without human effort, formed naturally

# Artificial Slope



# Natural Slope



# Background

- ◆ Aim: To compare how the nature of slope affects the growth and distribution of plants
- ◆ Independent variables: Slopes with different slope nature (artificial and natural)
- ◆ Controlled variables: Air temperature, humidity, light intensity, wind speed, gradient of slope
- ◆ Dependent variables: Abundance of plant, number of plant species, area covered by plant, plant distribution
- ◆ Assumption: The value of controlled variables are similar that doesn't affect the result

# Hypothesis

- ◆ The abundance and diversity of plants is higher in natural slope than artificial slope

# Abiotic Factors

	Temp. (°C)	Humidity (%)	Light Intensity (Lux)	Wind Speed (m/s)	Gradient (°)	Species Found
Artificial Slope Quadrat 1	17.9	38	650	0	59	4
Artificial Slope Quadrat 2	18.6	39	694	0	55	4
Natural Slope Quadrat 1	17.5	42	636	0	61	6
Natural Slope Quadrat 2	16.8	40	605	0	57	8

# Abiotic Factors

	Temp. (°C)	Humidity (%)	Light Intensity (Lux)	Wind Speed (m/s)	Gradient (°)	Species Found
Natural Slope	18.1	39	7180	0	69	>7
Artificial Slope	18.3	35	7050	0	74	3

# Apparatus

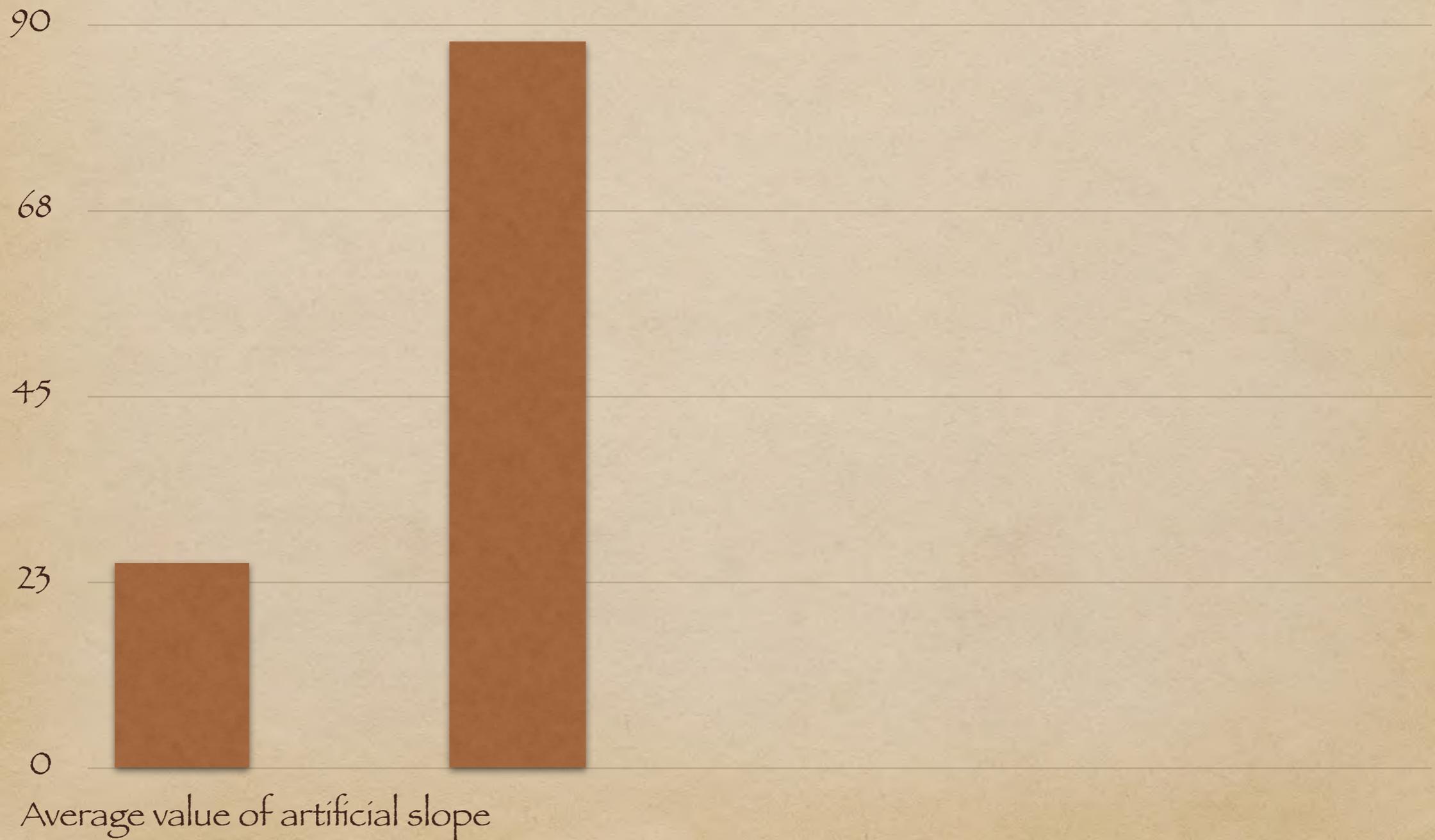


- ◆ Quadrat
- ◆ Light meter
- ◆ Anemometer
- ◆ Digital thermometer
- ◆ Measuring tape
- ◆ Flexible ruler
- ◆ Levelling rod

# Methodology

- ◆ Procedure: Slopes with different slope nature were found, i.e. artificial slope and natural slope
  - ◆ Place the quadrat (0.5m x 0.5m) on the slope 36cm above the ground gently
  - ◆ Conduct systematic sampling
  - ◆ The light intensity, wind speed, air temperature, humidity, gradient of slope were measured
  - ◆ The number of plant species was counted and recognised
  - ◆ The percentage covered by species was estimated
  - ◆ The above steps were repeated with the slope with similar abiotic factors

# Area covered by plants



# Number of species

	Natural slope quadrat 1	Natural slope quadrat 2	Artificial slope quadrat 1	Artificial slope quadrat 2
Number of species	6	8	4	4



# Analysis

- ◆ The percentage covered by plants in natural slope is higher than that in artificial slope by 242%
- ◆ The possible reasons are
  - ◆ The surface of slopes are different
  - ◆ The amount of water and nutrients in soil are different

# Analysis

- ◆ The diversity of plant species in natural slope is higher than that in artificial slope by 4 species
- ◆ The dominant species of plant is fairy ferns

# Conclusion

- ◆ Both abundance and diversity of plant species are higher in natural slope than that of artificial slope

# Limitation

- ◆ There are little difference between the controlled variables of different slopes, so it may be inaccurate
- ◆ There is not enough time for sampling more examples, the result may be more accurate through more samplings
- ◆ In winter, there is less plants present so that the result is not very significant

# Suggestion to improve accuracy of result

- ◆ Use the apparatus to find places with more similar controlled variables
- ◆ Sample more for more accurate result
- ◆ Do the experiment in Summer for more plants for data collection.