# Kohala Rainforest Field Experiments

Waikoloa Middle School

Tali Voss, Brianna Vallente, Aolani Peiper, Kealia Wolfe

## Some of Our Experiments

- How does elevation affect…
  - Amount of moss
  - Water quality of water from moss
  - Water quality in the stream
  - Circumference of fern and Ohia Lehua trees
  - Type of variation of Ohia trees
  - Depth of moss and substrate

# Moss Diversity in the Kohala Forest

**By: Aolani Peiper,**
**Brianna Vallente, and Madelyn Mumbert**

- **Experimental Question**

  What is the difference between lower elevation mosses and higher elevation mosses in the rainforest?

- **Hypothesis**

  If we test mosses in different elevations then the mosses will have more diversity as we get higher because the higher you go the wetter it is.

# Materials And Procedures

## Materials

- Quadrant
- Pencil
- Lab (data table)
- Clip board
- Calculator
- Camera

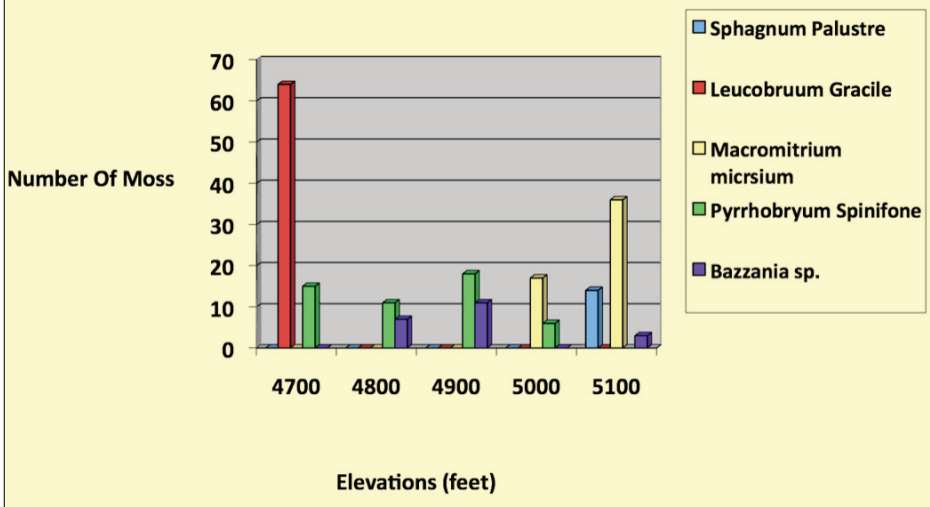
## Procedures

- At every hundred feet starting at 4700, we will take 3 samples.
- Take the quadrant, in that square count the number of different species of moss.
- Record results in data table
- Repeat this cycle for 5 more elevations
- Record averages per elevation

# Total Number Of Moss Species In Different Elevations

| Elevation / Species | 4700 ft | 4800 ft | 4900 ft | 5000 ft | 5100 ft |
|---|---|---|---|---|---|
| ***Sphagnum palustre*** | | | | | 14 |
| ***Leucobruum gracile*** | 64 | | | | |
| ***Macromitrium microsium*** | | | | 17 | 36 |
| ***Pyrrhobryum Spiniforme*** | 15 | 11 | 18 | 6 | |
| ***Bazzania sp.*** | | 7 | 11 | | 3 |

## Total Number Of Moss Species In Different Elevations




# Conclusion

• Our hypothesis was supported because there was more diversity at the highest elevation.

•Improvements:

- •Instead of randomly sampling, put the entire quadrant over 100% moss so we have more accurate data.
- •Study the mosses more, to ensure accurate identification

## Fern Abundance in the Kohala Forest

Kealia Wolfe

## Purpose: What elevation has the most ferns?

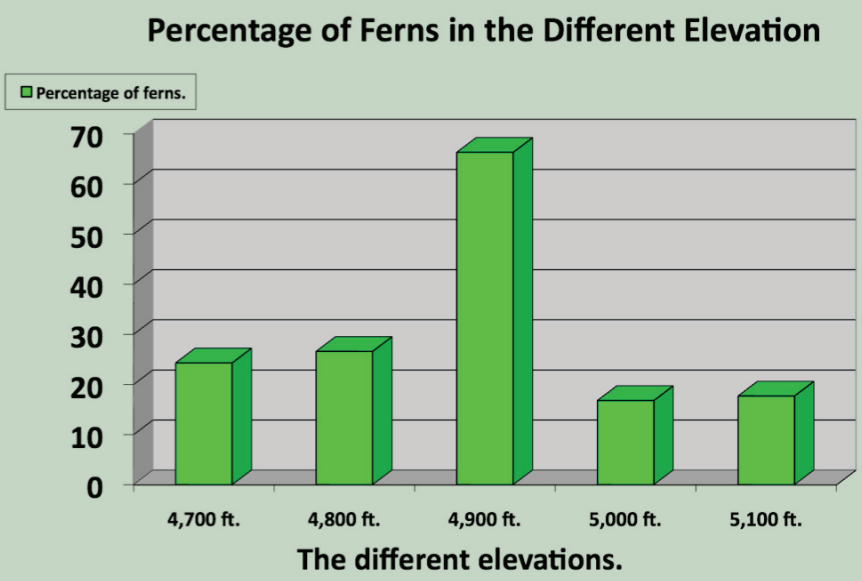
Hypothesis: If we go to different elevations then the amount of ferns will increase because of the wet soil.

# Materials

- Quadrat
- Calculator

# Percentage of Ferns

| Elevation (feet) | Sample 1 | Sample 2 | Sample 3 | Average |
|---|---|---|---|---|
| **4,700** | 49 % | 0 % | 23.8% | **24.3%** |
| **4.800** | 32.2 % | 5.6 % | 42% | **26.6%** |
| **4,900** | 89.6 % | 53.2 % | 56% | **66.3%** |
| **5,000** | 39.2 % | 8.4 % | 2.8% | **16.8%** |
| **5,100** | 29.4 % | 23.8 % | 0% | **17.7%** |




# Conclusion

- My hypothesis was not supported because at the highest elevation there was the least amount of ferns.
- I think that most of the ferns grew at the 4,900 mark because it may have been flatter than the other elevations.
- A follow up experiment I might do is to look at the slopes at each elevations and see if the ferns prefer a steeper angle or a flatter surface.


Thank You!