Geographical investigation into sub session on the studland heath land essay samp...

Science, Geography

Aims:

The key question for this enquiry is:

“ How and why does vegetation change along a psammosere succession?”

This question states that, I must investigate into how the vegetation changes on the sand dunes through the heath land.

With this key question, there are subheadings as shown below:

* How does the number of plant species change through the succession?

This question states, that I must show how the vegetation changes through the succession.

* How does plant cover change through the succession?

This question states that, I must show how the plant cover (percentage of vegetation) changes through the succession.

* How do the soil properties of pH, organic content and moisture content change along the succession?

This Question states that, I must show how the pH changes, the organic content and moisture change through the succession.

The above are the main aims of the investigation that I will answer in the following investigation.

On Fig. 1, it shows the location of Studland. It shows that it lies in the southwest of the United Kingdom, along the southwest coast.

Studland is the largest heath-land in Europe, and has remained a heath land because of the way it is looked after by the National Trust. Every year volunteers uproot all the trees invading on the heather so as to protect it, or another method is burning, heather can withstand burning, however trees cannot.

There are 3 belts of vegetation:

* 1st Belt:- Marram Grass – A pioneer species (the first to settle).

* 2nd Belt:- Heather – Likes acid soil, and has long roots and competitive.

* 3rd Belt:- Woodland – Very competitive, more than heather.

Method

The equipment we will be using will help us investigate the relief and layout of the succession.

Equipment:

* Clinometer (measures angles, i. e. the change in slop through the succession)

* Quadrate (for measuring the percentage of vegetation in an area, is a 10X10 grid, so vegetation can be made a percentage)

* Ranging Poles (for helping measure the change in slop and the distance in which it changes)

* Measuring Tape (for measuring the distance between each range pole)

To look at the plant life and discuss it (i. e. to identify as many plants as one can.)

Every time the slope angle of the succession changes, a reading of the:

* Slope (using the clinometer)

* Vegetation (using the quadrate)

* Distance (using the Ranging poles and measuring tape)

must be recorded.

All the results taken must be as accurate as possible, otherwise anomalous results may occur and a investigation would be unfair and false.

Analysis

As the sand to succession goes on, there is a trend. As the succession goes on we see 3 belts (see fig. 3), the first being the Marram grass, then the heather (maybe some gorse) and then trees. However how does this happen? When the Marram grass dies, it is deposited into the grown, and because all decomposition of the grass gives off acid, it makes the ground more acidic everytime the grass dies (this is shown by the pH levels in fig 4 on the graphs sheet) and also fertilises the soil making it richer in minerals.

Then heather a lover of acidic soil and has long thin roots, which can hold onto the soil (sand). The heather being a lover of acidic soils, it is more acidic then the Marram grass, and when the heather decomposes into the soil trees then set in, and if the heath land wasn’t protected by the national trust, trees would slowly take over the heath land, leaving the Marram grass and the heather no room, and no minerals and water, they would both die. Fig 5 shows the % of species of plant life living on the dune succession. This shows how the succession progresses.

Statistical Analysis

The graphs sheet has been set up to show the succession. It is set up so that it is easily to compare and all the graphs to refer to one another. Fig 5 and Fig 3 show the dune succession, the relief and the % vegetation coverage. Fig 4 shows the pH of the soil throughout the succession, and all 3 together show the plant coverage of different vegetation, to the pH of the soil, and how the relief shows a increase in height along the succession, showing age, behavior of the wind, and the wash up of sand deposited from the sea (longshore drift).

Studland Dunes Soil Analysis Results (Fig 6. 1)

Soil Sample

pH Level

Crucible

Crucible (wet)

Crucible (dry)

Crucible (burnt)

0

7

11. 32

15. 45

15. 35

15. 29

30

5. 5

21. 43

23. 40

22. 98

22. 82

60

5. 5

21. 89

23. 93

22. 93

22. 38

90

4. 5

20. 37

21. 28

20. 78

20. 50

120

4. 5

19. 93

25. 14

24. 99

24. 86

140

4. 5

10. 45

11. 74

10. 87

10. 62

(Fig 6. 2)

If the Crucible (burnt) is taken away from Crucible (Dry), the difference will be found. The difference being the mass bio-material.

Biomass Difference (Fig 7)

Crucible (Dry)

Crucible (Burnt)

Biomass

15. 35

15. 29

0. 06

22. 98

22. 82

0. 16

22. 93

22. 38

0. 55

20. 78

20. 50

0. 28

24. 99

24. 86

0. 13

10. 87

10. 62

0. 25

Analysis of Table

The table of results doesn’t show any trend what so ever, which would suggest that perhaps bio is completely random. I thought that the biomass would increase (because of larger plants dying) or decrease (the larger plants would use more minerals etc.)

Conclusion

My findings in light of my initial aims is that, the succession is left due to the nature of plants would become woodland. This would mean if all heath lands were left, after some time there would be no heath lands left.

I have also found out why and how the heath land occurs, due to Marram grass (being a pioneer (the first) plant) makes the soil acidic, leading on to heather and eventually on to trees. This is all based on the acidity of soil.

Also my results don’t show what I thought I would see, in the results of the biomass (Fig 7). I thought I would see a trend, I thought I would see the bio decrease due to heavy usage by the trees, then less usage from the heather and then the Marram grass. However I either have anomalous results or there is indeed no trend to the biomass.