Woodland Coursework

Introduction

In this coursework I am going to find out if trees modify the environment. I will be comparing the coniferous wood and the deciduous wood. Coniferous trees are evergreen which means they have leaves all year round. They usually have needle shaped leaves. Deciduous trees lose their leaves in autumn and grow them back in summer. Most deciduous trees are broad- leafed.

Location

Bishops Wood is located in the south east of Great Britain. The nearest town is Northwood, which is about 3km east of Bishops Wood. The land is slightly sloping. The size of the site is 38 hectares and its height above sea level is 80-130m.

Collecting Data

I collected information on temperature and to do this I used a thermometer. I recorded the results in degrees celsius. I collected information on sunlight with a light metre. The results were recorded in Lumens. I also collected information on soil moisture and I used a soil meter to measure it. I recorded the results on a scale of A-H where A is dry. To measure soil pH I first of all took a test tube . Secondly I added barrium sulphate and distilled water. I then shook the mixture and left it to settle. I recorded the results in pH and using pH.

Hypothesis 1

I think that there will be a difference in ground cover between the coniferous wood and the deciduous wood. I think there will be more leaf litter in the coniferous wood than the deciduous wood. I expect to see more living ground cover in the deciduous wood than the coniferous wood. My reasons for this are that coniferous trees are green throughout the year so they constantly have to lose leaves and replace them again, this results in more leaf litter. My second reason is that deciduous trees start to grow their leaves in spring and lose them all in autumn. This means there is more leaf litter in autumn and less for the rest of the year. I think there will be more ground cover in the deciduous wood than the coniferous wood because deciduous trees have long roots which hold the soil together and enable the growth of plants. There might be less living ground cover in the coniferous wood because coniferous trees are very tall so they might cover most of the light. If there is insufficient light plants cannot photosynthesize therefore they cannot live. I think that there will be less light in the coniferous wood than the deciduous wood because deciduous trees are planted very close together and are very tall so they block the light. I expect the temperature in the deciduous wood to be slightly higher than the temperature in the coniferous wood because the deciduous wood has more light therefore it is warmer.

Hypothesis 2

I think that there will be a difference in ground cover between the path and the woods. I

expect to see more living ground cover in the woods than on the path. I think so because when trees in the woods lose their leaves, they decompose in the soil to make it fertile, this allows plants to grow. Trees also hold the soil together to prevent soil erosion. I think there will be less living ground cover on the path because when humans walk on the path they trample on and kill any living ground cover. There is also more soil erosion on the path because the top soil comes off when humans are walking on it. The path may also be made of gravel and this is not suitable for plant growth because it is too hard. If the gravel is too hard it may be more difficult for the plant's roots to penetrate through it and absorb water and nutrients from the soil. I think that there will be more sunlight on the path than in the woods because the path is exposed and does not have any trees to block the sunlight. I expect the temperature in the woods to be lower than the temperature on the path because the trees in the woods cover the sun so there is less heat in the woods. I think the soil moisture in the woods will be higher than on the path because there are more plants and trees in the wood and they need most of the water in the soil. I expect the soil pH on the path to be the same as pH in the woods.

Hypothesis 3

Description of transect 1

Looking at the graph of Transect 1, I notice both living and non living ground cover. There were various types of ground cover . I found leaf litter in all the qudrats and it seemed to cover a high percentage ranging from 90% to 100%. Twigs were also in all the quadrats and they ranged from 20% to 40%. Bramble covered a fair amount in all the quadrats, ranging from 10% to 30%. The least amount of ground cover that I found was soil which was at 0metres and 4 metres only. It ranged from 5% to 10 %. I only found bracken at 8m which only covered 5%.

Description of Transect 2

The graph shows that there was both living and non-living ground cover. Leaf litter covered a huge percentage in all the quadrats ranging from 80% to 100%. Twigs were also in all the quadrats and ranged from 35% to 60 %. I found bramble at 4m and 8m only and it ranged from 5% to 10%. I found soil in two of the quadrats including 4m and 8m. They both covered 20% of the ground.

Description of Transect 3

In the graph it is evident that there is a variety of ground cover. I found beech nuts in all the quadrats except 4m. They ranged from 10% to 90%. There was leaf litter in all the quadrats and it ranged from 30% to 100% . I also found twigs in all the quadrats which ranged from 10% to 20%. I only found soil at 4m and at 8m and it ranged from 20% to 30%. Weeds only covered a small percentage of 5% at 0m and 12m. I only found roots at

4m which only covered 10%.

Description of Transect 4

The graph for transect 4 shows that there was leaf litter in all the quadrats. It ranged from 15% to 100%. There were weeds in all the quadrats excluding 12m and they ranged from 20% to 50%. I found twigs in all the quadrats and they ranged from 10% to 35%. Beech nuts were in all except 8m and their range was from 30% to 40%. I identified soil at 8m only and it covered 50% of the ground. Lastly I found weeds in all quadrats besides 12m. They ranged from 20% to 50%.

Evaluation of Hypothesis 1

I am going to compare the ground cover of Transect 1 in the coniferous wood and Transect 3 in the deciduous wood. In transect 1, leaf litter covered a bigger area of average 97.5%. A reason for this could be that coniferous trees are evergreen so they shed off their leaves throughout the year and replace them with new ones. Another reason could be that most of the trees in the wood are mature, usually at the age of 40 years so they tend to drop their leaves more often. Twigs covered an average of 27.5% which is moderate. This could be because coniferous trees constanltly shed their twigs as much as their leaves. It could also be because when coniferous trees are cut down, they are brashed down and left on the ground to decompose. Another possible reason could be that when the trees are older they drop more twigs. Bramble only covered an average of 17.5%. This could be because the soil pH of 5 is too acidic for the plant to grow. Secondly it could be because the soil moisture is just 2, which is dry so the plant will not get enough water for it to live. Another reason is that the coniferous trees take up most of the nutrients from the soil which leaves the plnt with less. Soil was the least I found and it covered an average of just 3.75%. A reason for this could be that the soil has been hedden away by the ground cover above it making it less visible.

In Transect 3 leaf litter was the most common and it covered an average of 57.5% of the ground which is average. The reason for this could be that deciduous trees lose all their leaves in autumn and grow them back in spring. This means there is more leaf litter in autumn and less for the rest of the year. During the time we visited, spring was only starting so there was a fair amount of leaves covering the ground. Beech nuts covered a moderate average of 30%. This might be because most trees in the deciduous wood are Beech trees. Beech trees drop some of their nuts to the ground. Another reason is that animals such as squirells aould have dropped them or they could have been blown by the wind. Twigs covered a reasonable average of of 20%. A reason for this could be that most deciduous trees are usually as old as 100 years so their twigs just fall off naturally. Another reason could be that animals such as birds or squirells that walk on the branches cause twigs to fall off. Weeds covered an average of only 5%. This might be because the light reaching the weeds is only 81%. The weeds are shadowed by the broad leafed and wide canopies. The insufficient light prevent the weeds from photosynthesizing

to make food. Another reason for the poor growth of weeds could be that the temperature of 11.5degrees celsius is too low for the plant to grow. Soil covered an average of 20%. The reason for this might be that the the soil is covered by other types of ground cover particularly leaf litter.

Conclusion

My hypothesis was partly right because my results prove that there was more leaf litter in the coniferous wood than the deciduous wood. Leaf litter had an average of 57.5% in the deciduous wood yet it was 97.5% in the coniferous wood. I was also correct in saying that there would be more light in the coniferous wood because I had a reading of 81% light in the deciduous wood whereas it was 91% in the coniferous wood. However my hypothesis was also wrong because I expected to find more living ground cover in the deciduous wood than the coniferous wood but there was more in the coniferous wood. The only living ground cover I found in the deciduous wood were weeds, which only covered 5%.

Evaluation of Hypothesis 2

I am going to look at the difference in ground cover between the wood and the path. I will be looking at Transect 3 in the deciduous wood and Transect 4 in the deciduous path. In the Transect 3 I found a lot of leaf litter and it covered an average of 57.5%. This is because some deciduous trees are very old so they drop a lot of leaves to the ground. Another reason is that deciduous trees lose their leaves in autumn so there might still be some leaves remaining on the ground if autumn has just ended. Beech nuts covered a reasonable average of 30%. A reason for this is that most trees in the deciduous wood are Beech trees and often drop beech nuts to the ground. They could also have been blown down by the wind or dropped by animals. Twigs covered an average of just 20%. This could be because deciduous trees have longer and bigger branches compared to deciduous trees, which do not fall off easily. Weeds only covered an average of 5%. This might be because the light reaching the weeds is only 81%. The weeds are covered by the wide canopies of the deciduous trees. When there is insufficient light, the weeds cannot photosynthesize to make food and to live. Another reason for the poor growth of weeds could be that the temperature of 11.5 is too low for growth. Soil covered an average of 20%. The reason for this might be that the soil is covered by other types of ground cover, especially leaf litter.

In Transect 4, leaf litter covered the biggest average of 58.7%. The reason for this could be that the dead leaves were blown to the path by the wind. Beech nuts only covered an average of 17.5%. A reason for this is that there are no trees on the path so the nuts could have been placed there by animals or blown by the wind. Twigs covered a small average of 20%. This might be because the path is clear of trees so the twigs could be coming from the wood. Weeds covered an average of 27.5%. This is because the weeds get trampled on by people using the path and die. Another reason is that the path is very hard and this makes it difficult for plants to absorb water and nutrients from the soil.

Conclusion

After analysing Transect 3 and 4, I have reached a conclusion that my hypothesis was not entirely correct. My results show that there was more living ground cover in the deciduous path than the wood. I found an average of 27.5%weeds on the path and the only living ground cover in the wood were weeds which coered just 5%. This might be because the weeds are specially adapted to living on the path despite the harsh conditions. Another reason could be that there was more light reaching the path because there were no trees covering it. There was 87% light. This allows plants to carry out photosynthesis.

Evaluation of Hypothesis3

I am going to compare the ground cover of Transect 1 in the Coniferous wood and Transect 3 in the deciduous wood. I found a lot of leaf litter in Transect 1 and it covered and average of 97.5%. This is because coniferous trees are evergreen so they shed their leaves throughout the year and replace them with new ones. Another reason could be that most of the trees in the wood are fully grown so they drop a lot of leaves. Twigs covered a reasonable average of 27.5%. A for this could be that coniferous trees drop their dead twigs throughout the year. Another reason is that coniferous trees drop their dead twigs throughout the year. Another reason is that coniferous trees have their branches brashed down for commercial purposes so this results in more twigs on the ground. Bramble only covered an average an average of 17.5%. This might be because the soil moisture has a reading of 2 which is dry, the plant will not get enough water for it to live and it will die. Another reason could be that coniferous trees take up most of the nutrients and water. The soil pH of 5 could also be too acidic for the plant to grow. Soil was the least I found and it covered an average of 3.75%. The reason for this might be that the soil is hidden away by other types of ground cover above it.

In transect 3 I found a lot of leaf litter and it covered 57.5%, which is average. This could be because deciduoud trees lose their leaves in autumn and grow them back in spring. Beech nuts covered an average of 30%. A reason for this is that there are many beech trees in the deciduous. Twigs covered an average of just of just 20%. This is because deciduous trees have bigger branches which do not drop as easily as those of coniferous trees. Weeds only covered an average of 5%. This is because the weeds are blocked from the light by the tree's canopies. The light reaching tham is only 81% so this may not be enough for them to photosynthesise. If they cannot photosynthesise they cannot make any food to live. Soil only covered an area of 20%. This could be because it is covered by other types of ground cover making it less visible.

Conclusion

My analysis of Transect 1 and Transect 3 does not correspond with my hypothesis. I expected to find more living ground cover in the area of habitat managementthan the area of economic management. My results seemed to suggest the opposite. The only living ground cover I found in the deciduous wood was weeds which covered just 5%. In

the coniferous wood I found an average of 20% bramble and 1.25% bracken. A reason for these results might be that we went to the woods when not much had started growing in the deciduous wood. I think we would have found more living ground cover in the deciduous wood if we had gone in the middle of spring or summer.

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