

# LAMBERT PARK ECOSYSTEM INVESTIGATION

## Introduction

An ecosystem is according to the oxford dictionary; "a biological community of interacting organisms and their physical environment". These organisms are thought to be linked together through nutrient cycles and energy flows. Energy, water, nitrogen and soil minerals are other essential components of an ecosystem. The energy that flows through ecosystems is obtained primarily through the sun's rays, it enters the ecosystem through a process called photosynthesis.

We describe ecosystems using four different categories;

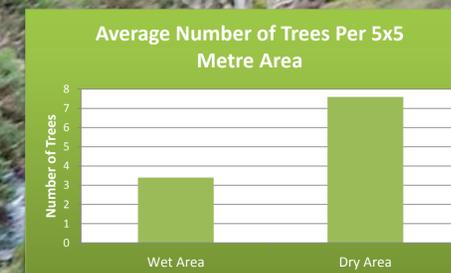
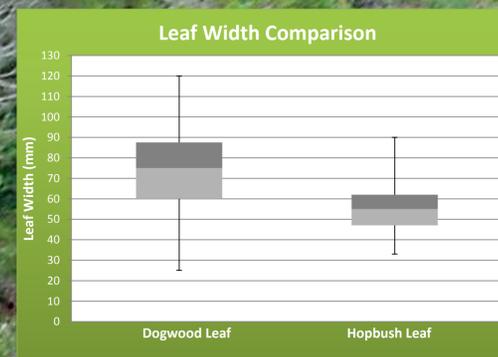
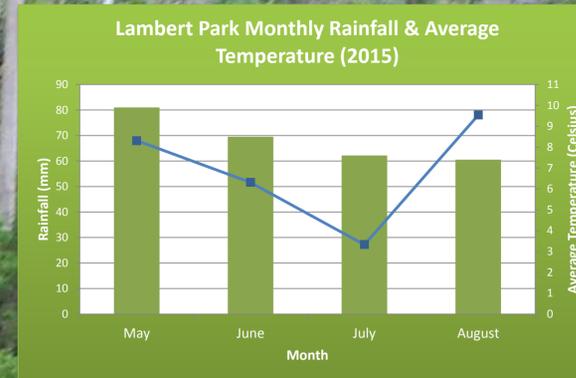
- **Primary Producers are green plants. These plants, including trees and flowers, manufacture the bulk of their food through a process known as photosynthesis.**

- **Consumer Species are animals that live within an ecosystem, from insects to wild cats to humans. You can describe the different consumer species of an ecosystem by placing them into three main categories: carnivores, herbivores, and omnivores.**

- **Detritivore Species are organisms that feed of dead decomposing consumer species. Many detritivores are microorganisms, such as bacteria, but fungi and larger creatures like earthworms and crustaceans also act as decomposers.**

- **Abiotic Components are the non-living components of an ecosystem and they are often overlooked. Rocks, minerals, soil, water and the atmosphere itself are examples of abiotic parts of ecosystems.**

It is important that we know how ecosystems work and exist because if we don't know how to sustain ecosystems in the near future we could ruin the way ecosystems work and survive.



## Discussion

During our time conducting our investigation on Lambert Park, one of the biggest changes was the amount of water in the creek, and moisture on the plants and in the air, with the place seemingly coming alive the further into the investigation we got. This observation is echoed in our data, with the average monthly rainfall increasing dramatically in August compared to July, with the rainfall reaching 78 mm, from 27.2 mm in July.

The temperature in Lambert Park has been gradually falling as Tasmania experiences Winter and its effects, from just above 10 degrees Celsius average in May, to 8.5 degrees Celsius in August.

In our research we compared two different sections of Lambert Park, with one experiencing wet conditions and relatively little light due to its position in a gully, whilst the other area was on the main hill of the park. This comparison stood out in regards to the number of trees in a 5 square metre space, with the wetter, darker area averaging 3.2 trees per 5 square metres, whilst the dryer area that experienced more sun averaged 7.6 trees per square. This is because trees require sun to grow, and the trees in the gully weren't getting much sun. However, a major difference between the two areas was that the gully seemed to have substantially larger trees than the dry area, which is most likely because they have less competition for nutrients and don't have other trees blocking their sun as they rise out of the gully.

On the Pit Fall Trap experiment, we collected a total of 36 separate specimens from 30 traps, meaning that we averaged around one insect per trap. Although small, this shows that the insects are spread relatively evenly around Lambert Park, with only one exception to this rule, where four traps placed in close proximity collected an estimated 1,100 Springtails, however this was left out of the graph as it was not precise and it would distort the data in the graph.

## Aim

To perform a series of experiments on the Biotic and Abiotic factors of Lambert Park to discover more about its ecosystem

## Method

### Tree Height

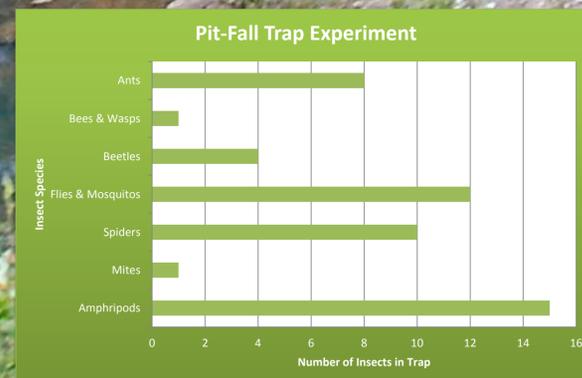
- Pick a tree to measure, and stand somewhere that the top is visible from
- Measure distance from that point to the tree
- Using a Clinometer, measure the angle to the top of the tree, then measure the height the clinometer was from the ground at the point of measuring
- On a calculator, type in the angle, then press 'sine'. Then multiply the result by the distance from the tree in metres, and add the height the clinometer was from the ground in metres

### Tree Density Sampling

- Measure a 5 x 5 metre square using a tape measure, and mark the boundaries with string and tent pegs
- Record the number of trees within the 5 x 5 metre square, and measure the diameter of all of the trees 1.4 metres off of the ground

### Pit Fall Trap

- Using a trowel, dig 5 holes and place a plastic cup in each, ensuring that the top of the cup is level with the ground
- Pour 1cm of methylated spirits into each cup
- Return to the cups after 24 hours, and record what was inside of each



## References

*Trigonometry* 2014, Maths is Fun, accessed 17 September 2015, <<https://www.mathsisfun.com/algebra/trigonometry.html>>.

*Parts of an Ecosystem* 2015, Synonym, accessed 16 September 2015, <<http://classroom.synonym.com/describe-parts-ecosystem-6870.html>>.

*Ecosystems* 2014, Encyclopedia of the Earth, accessed 16 September 2015, <<http://www.eoearth.org/view/article/152248/>>.

*Box and Whisker Plot: Quartiles, Boxes & Whiskers* 2014, Purple Math, accessed 19 September 2015, <<http://www.purplemath.com/modules/boxwhisk.htm>>.