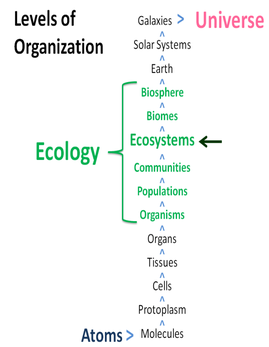
Lambert Park: *Under the Surface*

Information on Lambert Park and Ecosystems

***An ecosystem is* community of living organisms** which interact constantly with the non living factors around them and also themselves. (eoearth.org) An ecosystem is made up of factors such as the air, temp, water etc. These help shape the abiotic factors such as plants and animals within that environment and vise versa, creating complex systems. These two key factors are Linked together through a variety of things but the most important are nutrient cycles and energy transfers which Accor in many different forms. It is really the idea that, "living organisms continually interact with each other and with the environment to produce complex systems with emergent properties" (encyclopedia.com)

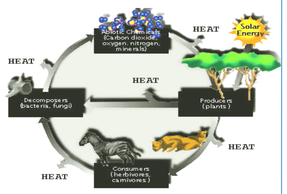
An ecosystem is one of the core concepts in both ecology and biology.
Ecosystems serve as a core level of biological organization, here organisms continually interact with their environment. Therefor it sits above an eecological community because in an ecological community is known to be just organizsms or species interacting with only themselves, not the environment around them. Yet sits below Biomes. Put simples biomes are however just large ecosystems and although are technically higher up, can sometimes be accounted as equal to a regular ecosystem. The biosphere sits well above these two as it is the largest ecosystem possible. (eoearth.org)



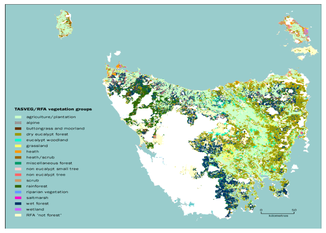
ecosystems may be measured and described differently according to the observer Unlike in physics or maths. The components or factors in the ecosystem such as energy transfers and organisms may of course be correctly described, labelled or measured. But the ecosystem itself is really just a concept left for the observer to define the boundary of. There is no right or wrong as to where the boundaries of an ecosystem should be, and this is why it has been one of the most enduring concepts. At a basic level, all ecosystems must include an abiotic and biotic factor as well as an energy source. For example a single patch across mt Wellington may be described as one ecosystem, or the entire mountain. This flexibility of terminology has enable people to focus in on specific areas and how they interact. (www.wwf.org.au))

At all system levels found on earth there a similar pattern to with they operate. At a basic level typical ecosystems found in nature will generally contain a consumer, a producer, a decomposer and an energy source. The producers are generally capable of harvesting the energy from the sun by photosynthesis and of using this energy to convert carbon dioxide and other inorganic chemicals into the organic building blocks of life, hence creating edible plant matter which gives the consumers an energy source. The decomposers then feed off this source, and break the organic matter back into inorganic matter, processing matter for the consumers to feed on again.

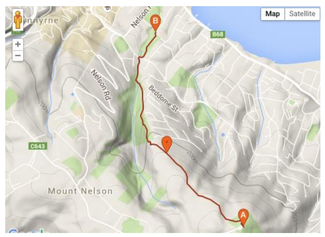
A fantastic, real life example of this process in action would be the African desert. It is important to remember that like many other types energy transfers, energy is lost through heat at stages. (encyclopedia.com)

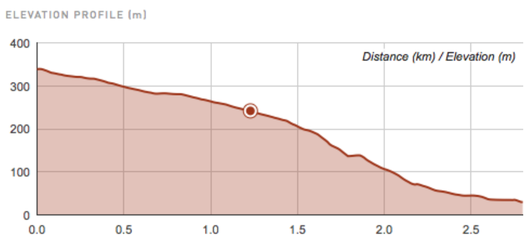


how a basic food chain works? The higher the species is to the producer or energy source, the greater energy is available. The problem is that this works as a pyramid, at the top are the plants or producers, the lower down we go the less energy is available. If you have ever wondered why in nature there are so many ants and not many lions? This is the reason why. (http://eschooltoday.com)

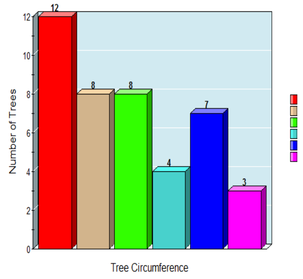


Lambert park is a selenic walking trail through Sandy Bay. The top section of the trial is described as a dryer woodland and open forests where as the second half of the trail is described to be a wetter and more lush environment. This is because as we enter the lower path of the trial, we see it merges with the rivulet, a constant fresh flowing water supply which produces a lot more diverse and greener or lusher looking species than that seen higher up the path. This wet type of vegetation may be described as a wet forest although this area is so small, on the tasveg map it is still classified as a dry eeucalyptus forest, very much like the area found above where the flow off water isn't.(dpipwe.tas.gov.au)Like A true wet forest it occurs below 1000 meters and is found on a gullies which contains a reliable water supply. The eucalyptus here do not provide a closed canopy and yet, some reliable shade.



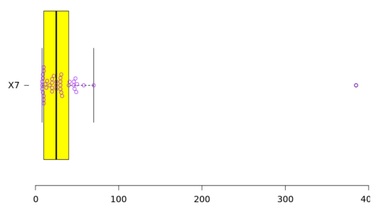


Tree Circumference

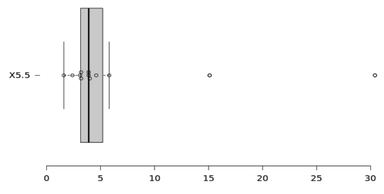


- This data is the combined results of all 5 groups. Spread over both the river and higher slopes.

Tree Height



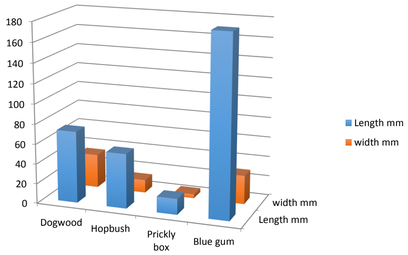
Tree Circumference



- To the left shows the tree height and the majority of trees are of a smaller height, this is complemented as to the right shows the where the median Circumference is. Both show a large amount of juvenile or smaller trees.

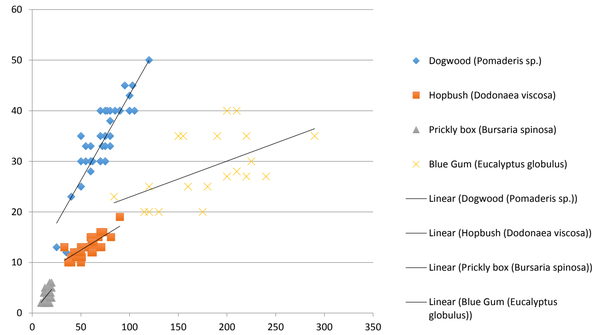
This fact that the majority of trees have circumference of around 30 cm and height of around 3 meters gives us a clear indication that are a large variety of species that are receiving enough light, nutrients and space to survive effectively. If this area was a dry eucalypt landscape we would see less smaller trees and more grass's and more taller gums. "Dry eucalypt forest and woodlands cover much of the central and eastern parts of the Tasmanian landscape, with the greatest diversity of eucalypt species in the south-east of the State. Understory are predominantly hard-leaved shrubs, and/or a ground layer dominated by bracken, grasses or graminoids."- www.dpipwe.tas.gov.au
The constant water flow here which has turned this dry woodland into what could be considered almost as wet forest, has opened the window for these smaller species to thrive. The less eucalypt tree species means that the above head canopy is not as thick, so just like a larger eucalypt forest there is an opportunity for a more open canopy, as well as vast amounts of shade.

Average Length and Widths in mm of Plant Species in Lambert Park



- This data shows the average length and width of the combined collected samples by the 4 groups.

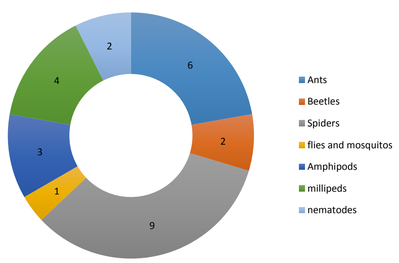
Leaf Length and Widths mm Continued



- This Data puts into perspective all the 4 groups data and shows the length vs. the width in mms.

If we go on to look at the next data set we see a variety of plant species. Unfortunately this data cannot identify the numbers of certain tree species in this area, however we are able to identify the types of species and what it can tell us about our landscape. This large variety in lead size can also accurately explain why we see consistent numbers of different circumference sizes of the spices around the place. What is most interesting is that between all the species, the leaf width to length ratios all vary by a large amount. This Indicates that the species selected are all of different families, meaning that there is obviously a wide spread variety of species in lambert. It is interesting to see that the blue gums leaves did not appear to follow a particular linier line such as the hope bush. There leaves follow the tread of beginning out at a said width then slowing down how wide they grow compared to their length. All the other species appeared to follow something more linear. The Hop bush leaves were fitting with a hope bush of a mature 3 meter size, where as the other species all had leave sizes that indicated they are still growing, even the blue gum. The Hop bush and prickle box species generally grow up to around the 10 meter mark (www.anbg.gov.au), yet there were no trees above 6 meters that were not gums this and the fact that the majority of circumferences sizes around lambert were below 30cm, tells us that the major population is still maturing or of a small nature. Lambert park contains a large variety of rocks which have hidden under the soiled surface which has been washed away by the river system, creating shallow soil and exposed rocks. The Hopbush and Pricklybox grow among open eucalypt forests and rocky, shallow soils. (www.en.wikipedia.org)

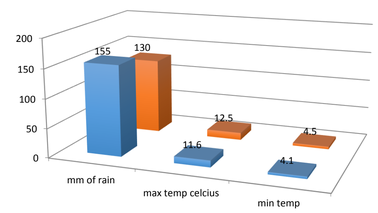
Insects Collected from Pitfall Traps



- The Following data represents all of the pit fall groups which were space around 20 meters apart to give us an insight to the invertabrite life .

From the insect data we can clearly see that largest number of insects collected were ants and spiders and the least beetles and nematodes. From this data we can see that around lambert park their a variety of species, some more prominent than others. It is hard to identify whether or not the climate has anything to influence why there is such a large spider population. It is hard to identify what spiders are most common also as spiders can easily adapt anywhere, this data also is not useful to identify the types of landscape. Spiders commonly feed off a variety of pray but a most common one is millipedes. (www.findaspider.org.au) The fact that there are 4 millipedes which is a medium size, shows that there is more enough food for spiders, and the millipedes. The fact that there is enough food for the millipedes tells us that there is lots of decaying and moist wood lying around (www.en.wikipedia.org), meaning that the environment must be lushes and green. The large ant numbers tells us that there is are large colony near by, all these ants would have been searching for food for the colony. The other insect types are that of common variety around Tasmania.

Hobart Winter vs Lambert Park



- This data is the comparison of Hobart's average winter weather vs. that recorded at Lambert park.

From the weather station data we can conclude that Lambert park got more rain than that in Hobart. However this alone cannot explain as to why this area is more lushes than that of Hobart. There could be a variety of reasons as to why lambert parks temperature is lower than that of Hobart but the city elements is that most likely reason as to why the temperature is hotter in the middle of the city. According to the U.S. Environmental Protection Agency, cities containing large amounts of infrastructure will experience temperatures between 1-3 degrees hotter as these materials store heat better than that of plants. Especially when everything is cooling down at night time, some cities experience up to 12 degrees of fluctuation. The Hobart station is positioned right in-between buildings which store heat, where as lamberts station is set up near grasses and vegetation which cause cool evaporation and less heat. (www.smithsonianmag.com)

Aim

To uncover how the environmental factors of lambert park interact with the flora and fauna to produce a complex ecosystem.

What we did

Tree circumference and density

- First we took the 20 meter string and peg each plastic tab to the ground to form a quadrilateral with a 25 2 meter area.
- Then we measured all the trees over that 7 cm so that they may be classified as tree and record them in the tables. All 4 other groups did this task as well.

Tree height:

- I Initially measured my height to the tree, then using the tree evaluation app calculated the angle from the observer to the tip of tree. Then when doing the calculations also added in the observer height. This was repeated and recorded by groups 2 and 3.

Leaf width and diameter.

- We measured the leaf length and width in mm of 40 leafs off a dogwood tree. Other groups did the same with the following species: Hop bush, Blue gum and Prickly Box

Pitfalls

- We set up 6 pitfall traps by digging a small hole in the soil then placing a container with 100ml of mentholated spirits inside. Ensuring that the brim of the container is flush with the surface, then I left these for a day. The other 5 groups did the same in different areas.

Weater

weather data was recorded from the Hutchins weather station over the period of winter.

Summary of Lambert Park

In conclusion to the above data the following statements can be drawn. The lambert park environment constantly is lushes and greener than your typical dry eucalypt or mixed eucalypt forest found in these areas because of the off flow of water. This constant stream over many years has carved thick hills on either side, this has created a rocky environment with shallow soils. These soils and rocky landscapes have reduced the amount of large eucalypts and increased species which thrive in these environments such as the Hopbush and Prickly box. This reduction in large trees has created less competition for space and light, meaning we see a larger array of smaller trees coming through in our data. Because this environment is also so lushes and green, there is also the chance for plenty of plant food, meaning there will be plenty of insect life here, both small and large(as shown in the data.) The weather system here is greener and provides plants with sufficiently more rainfall than that received in the city, as well as cooler temperatures.

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