Paradise Valley Conservation Area

Forest Group #2

May 19th, 2018

Becca Anglesey, Devoni de Leon Whitehead, Jay Brar,
Christopher Chhay,William Ibarrondo


PARK BOUNDARY
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Biological Interactions

Becca Anglesey

Nothing lives in a bubble! Everything interacts with things in its environment. Here are a few key terms to know and examples of how biotic organisms interact:

Mutualism: Biological interaction in which participants benefit each other (+/+). And example of a mutualism is how the Trillium interacts with ants. Ants eat the elaiosome on the tip of the Trillium seed, and the Trillium gets seed dispersal.

Competition: Biological interaction in which participating organisms are harmed (-/-). All the trees in the forest compete with one another for the same resources they need to live. More trees mean less resources for all the trees, and vice versa.

Herbivory: Consumer-Resource interaction where animals eat plants (+/-). Deer like to eat plants like young trees and shrubs, making them primary consumers.

Carnivory: Consumer-resource interaction where animals eat other animals (+/-). Bears will eat salmon, which is a carnivorous interaction. This places bears on multiple trophic levels, as they eat both plants and animals.

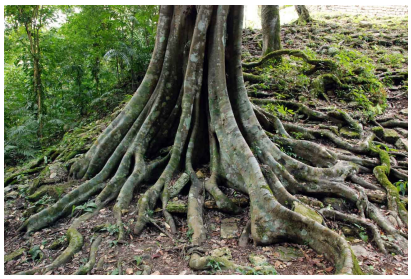
Nitrogen Fixation: The process in which Nitrogen (N2) is taken from the air and converted into Nitrogen suitable for plants (NH_4^+). Can you think of one significant example of an organism from the field trip that is a major Nitrogen Fixer?

Nitrogen Cycling: The process in which Nitrogen is processed back into the soil from animal droppings and dying organisms to be taken up again. Banana Slugs and other detritivores are very important to this process!

Resources and Adaptations

Devoni Whitehead

Sword ferns, Oregon Grape, and Salal all have unique, **durable, and long lasting leaves.** These plants, compared to the leaves of a vine maple, are much thicker because these plants very often live without direct sunlight. In order to be resourceful with the little sun that they may receive, it would make the most logical sense to create a set of durable leaves that last for years, as opposed to leaves that are brittle and break off.



While walking through the forest, you may see some trees that have very **shallow** roots. This is an adaptation for plants to go out and grab the nutrients necessary for them which is higher up in the soil.

If you have ever felt the pain from a stinging nettle, then you have experienced the adaptation of the plant first hand! The stinging nettle contains chemicals such as formic acid and histamine which provides a really **painful, stinging sensation** that can last for a while. The reason for this a plants defense mechanism against herbivory.

The Pacific Yew has needle like leaves that are formed in a way that the **leaf is darker on the tops of the leaves and paler on the bottom of the leaf**. This leaf composition allows the plant to absorb as much light from above as possible. If you compare a yew tree in the shade and a yew tree in the sun, you will see that the **Shaded Yew tree has leaves that are a lot thinner**. This allows for shaded trees to more efficiently obtain sunlight, because a thicker leaf will be harder for all cells to perform photosynthesis.

Human-Nature Interactions

Jay Brar

The Paradise Valley Conservation Area was homesteaded in 1898 by James and Eliza Lloyd. For additional income, the Lloyd family also logged the area. Towards the end of the 20th century, the Lloyd family found it difficult to maintain the property. They decided to sell the area to a public agency that would be responsible for maintaining the property. The Lloyd family agreed to sell the property on the terms that nothing shall interfere with the historical condition and wildlife habitat of the site.

The Paradise Valley Conservation Area is home to a wide variety of resources used by Native American tribes in the Pacific Northwest. Some of the valuable resources encountered throughout the field trip include **Miner's Lettuce, Indian Plum, Western Hemlock, Vine Maple, Western Red Cedar, and Salal**. Many of these resources still have uses for them today; however, **Pacific Yew** is the only plant without a long history of use by humans.

Western Red Cedar is particularly valuable due to its high durability and resistance to the elements. Native Americans in the Pacific Northwest used its wood for a multitude of things from the body of their canoes to the structure of their homes.

Biological Communities

Christopher Chhay

Three main tree species in the Paradise Valley Conservation Area include **Douglas Fir**, **Western Hemlock**, and **Western Red Cedar**.

Douglas Fir trees come in the early stages of succession because they're a sun-loving species and they're a non-climax species.

Western Hemlock are the tree species that come in later stages of succession because they are a shade tolerant species that thrive in the shade and they are a climax species

Western Red Cedar is also a climax species that come in later stages of succession because they are shade tolerant and thrive in the shade.

Succession also changes through space, in the Paradise Valley Conservation Area many spots are dominated by trees, but as you move through the forest there are many spots that is dominated by shrub.

After some of the trees die it allows other trees to thrive such as the holly tree that can grow out of a stump or just a nurse log for other plants to grow on.

Habitat Diversity

William Ibarrondo

There are 210 Vertebrate species native to the Pacific Northwest. 56 of these species use tree holes and cavities. The following are examples of habitat.

Snags- provide a habitat for a wide variety of wildlife.
Woodpeckers create nesting holes which are also used by other species such as: Owls, Bats, Martens, Flying squirrels, Vaux's swifts.

Snag Age estimation

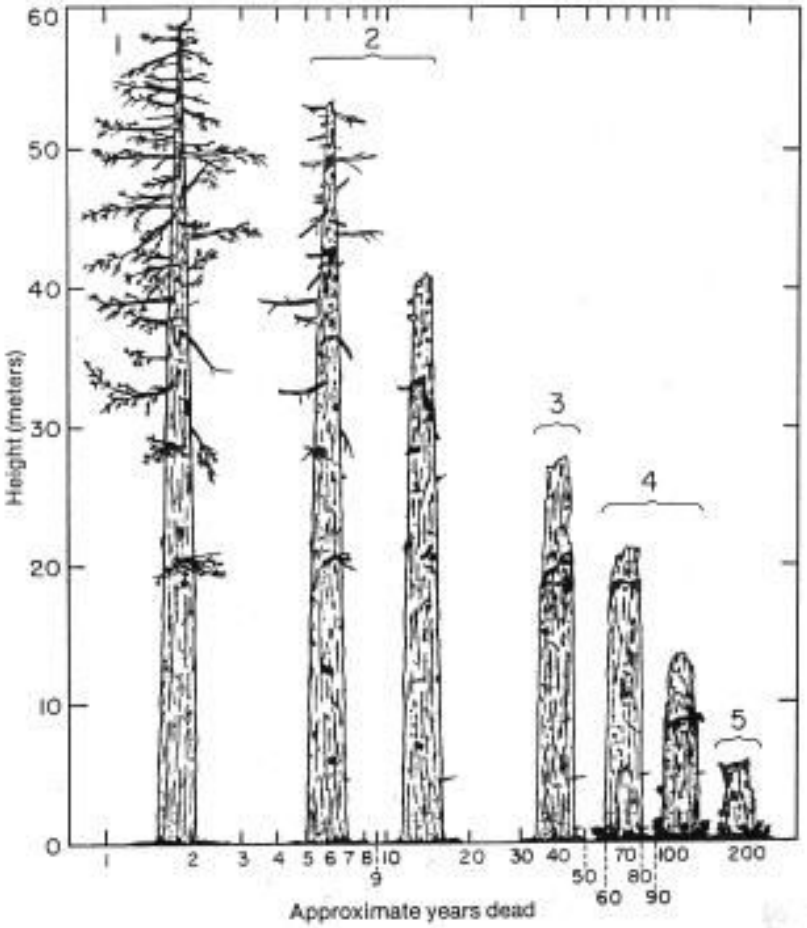


Figure 16. Successional or decompositional evolution of a standing dead Douglas-fir tree (courtesy Steve Cline).

Woody Debris- provide microhabitats and food for many species, helping maintain biodiversity in the forest.

Woody Debris/ Nurse Log