

# Phenophase Study

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Figure 1: Pine Tree



3/11	Needle length 10cm Bud .5 cm
3/18	Needle Length 12.5cm Bud .5cm
4/15	Needle length 14.5 Bud 1 cm
4/22	Needle Length 15.5 Bud 1.5 cm
4/29	Needle Length 15.5 cm Bud 1.6 cm
5/6	Needle Length 15.5 cm Bud 2 cm

The data shown shows that the pine tree has a slow and steady growth rate with little changes.

Figure 2: Chokecherry



3/11	Leaves starting to form .4 cm red.
3/18	Leaves buds 1cm Turning redder.
4/15	Buds/ leaves 3.8 cm Shoots are red and green
4/22	Leaf 3.5 cm Bud 1 cm
4/29	New leaf 5 cm Bud 3cm New growth branches
5/6	Leaves 5.5 cm Buds 9.5 cms

This plant seems to grow fast. The flower buds are already noticeable on week five. As is the size of the plant itself it has completely bushed out.

## Introduction

Phenology is the study of the timing of annual animal and plants (Visser and Both). This is an extremely sensitive process and the changes to our climate have greatly affected our plants and animals. Phenological studies can help us better understand events as or climate change (rangermac.org). Climate change can affect the timing of when plants have time to reproduce.

Phenological studies can help us begin to understand how different species are able to withstand and adapt to the effects of climate change. Different species adapt at different rates (rangermac.org). When this happen it could disrupt our ecosystem. With rising sea levels causing salt water intrusion on freshwater species. This may cause some of the species to die or relocate disrupting our delicate ecosystem(Climate Impacts on Ecosystems).

What is a phenophase? A phenophase is an observable stage in a plant or animals life cycle that happens annually. It is defined by a start and an end. This is a time period when a plants reproduction may occur or they grow. There is often only a short window for this to happen. When this does not happen there is often negative consequences for that species (usgs.gov).

## Hypothesis

- I predict that my plants will all bud at different times:
- I predict that the Choke Cherry will bud out first because it is on the sunny side of the hill and it is that type of plant/tree.
- I predict that the Oregon Grape may take longer to buds or may not. It is on the dark side of the hill and seems to be getting eaten by the deer.
- The pine tree seems to be the producing its bud the slowest. So I predict it will produce its buds towards the end of summer.

## Conclusion

I believe my hypothesis is supported. I predicted that the chokecherry is a plant that would flower early partially because it is on the sunny side of the hill. The pine saves it resources and produces in late summer. As for the oregon grape it should already be producing flowers, I believe it is not because it is food for the animas and it has a hard time growing on the hillside where it is located.

Figure 3: Oregon Grape



3/11	Height 20.5 cm
3/18	Height 22.5 cm Leaves 3 cm
4/15	Height 23 cm Leaves 3.5cm
4/22	Height 25 cm Leaf red 4.5 cm Leaf green 3 cm
4/29	Height 18.4 cm Leaf 4.9 cm Bud 1.7 cm
5/6	Height 15.5 cm Leaf 7 cm New leafs/ buds 2.5 cm

This plant has been eaten by deer. Because of this it growth was hard to chart. I found that the new growth began branch out rather than grow tall as you can see in the change of height.

## References

- 1.) What is Phenology and Why is it important? Rangermac.org. (2018). Retrieved 4/23/21
- 2.) The Impacts of Climate Change on Phenology: A Synthesis and Path Forward for Adaptive Management in the Pacific Northwest. USGS.gov. (2017).
- 3.) Shifts in phenology due to global climate change: the need for a yardstick Marcel E Visser and Christiaan Both. Royal Society. (2005)
- 4.) Climate Impacts on Ecosystems. Epa.gov. (2017)