

How does the Soil Temperature and the Surface Temperature Compare between the HPI Prairie and the HPI Bioswale?

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Our Team

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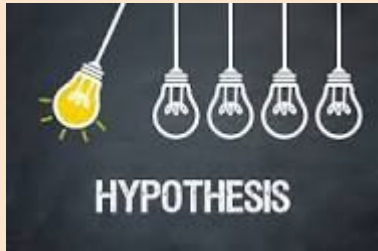
Why are Native Prairies Important?

Native Prairies are Important because...

- They provide food and habitat for the animals
- They require little maintenance to keep
- They reduce Soil erosion
- They Help with Biodiversity
- They Capture Access Water
- They slow Soil Runoff

Research Question & Hypothesis

RQ: How does the soil temperature and the surface temperature compare between the HPI Prairie and the HPI Bioswale.



Hypothesis: If we test the surface temperature and the soil temperature of the HPI Prairie and the HPI Bioswale, then the Bioswale will have a cooler surface and soil temperature because the Bioswale is wetter and the taller plants will provide more shade causing a cooler environment.

Variables



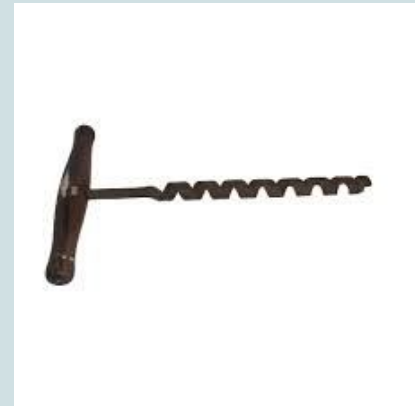
- Dependent Variable
- Soil and Surface temperature
- Independent Variable
- Bioswale



Constants: Location: prairie and bioswale, Same time of day, same tools, and follow the same steps.

Materials

- *Infrared Thermometer*
- *Digital Probe Thermometer*
- *Soil Can*
- *Auger*



Step by Step Procedures:

1. *We went to the Prairie.*
2. *Took out tools and collected data for the location that we were currently in.*
3. *Recorded the data down on paper.*
4. *Repeat all steps at other location (Bioswale)*



Weather Conditions on the Day of Data Collection

Day 1: F: 32.3, C: 3.5, Cold, 10:13

Day 2: F 48.4, C 9.1, Sunny, cold, 9:55

Day 3 F 53.6, C 12.4, Sunny, cold, 9:45



Data - How does the Surface Temperature and Soil Temperature compare between the HPI Prairie and the HPI Bioswale?

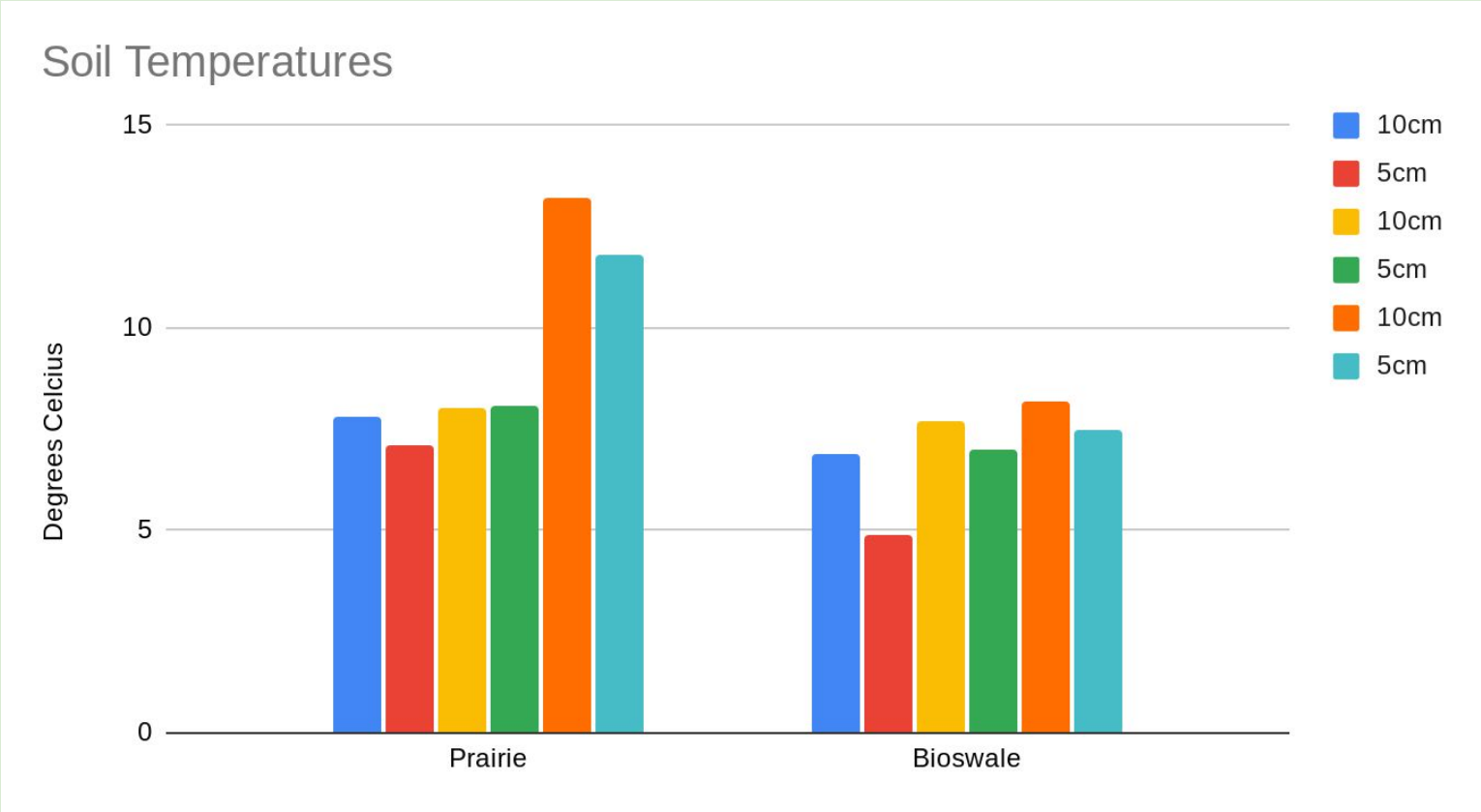
Soil Temperatures in Celsius

	Day 1		Day 2		Day 3	
	10cm	5cm	10cm	5cm	10cm	5cm
Prairie	7.8	7.1	8.0	8.1	13.2	11.8
Bioswale	6.9	4.9	7.7	7.0	8.2	7.5

Average Surface Temperatures in Celsius

	Day 1	Day 2	Day 3
Prairie	0.8	5.2	10.9
Bioswale	1.9	6.8	10.9

Results: How does the Soil Temperature and The Surface Temperature compare between the HPI Prairie and the HPI Bioswale?



Day 1
Day 1
Day 2
Day 2
Day 3
Day 3

Conclusions:

- *We found that the soil temperature in the bioswale was cooler because it was moist and the hill that goes into the bioswale drains all the water from above the hill into the bioswale.*
- *And we found that the surface temperature was cooler in the prairie because the spot where we found our data had lots of plants covering the ground so the plants absorb all the sunlight and less gets to the surface.*



Discussion: What does this mean?

BY FINDING THE SURFACE TEMPERATURE AND THE SOIL TEMPERATURE IN THE PRAIRIE AND THE BIOSWALE, WE THINK THE PRAIRIE SOIL TEMPERATURE WAS WARMER BECAUSE OF BETTER PLANT GROWTH IN THE SPOT WE TESTED. WE ALSO THINK THAT THE BIOSWALE SOIL



Discussion: Possible solutions!

- **Having more schools like HPI plant prairies at their schools to help the environment.**
- **Going outside in prairies and collecting data to learn more about native prairies.**
- **Planting prairies in wildlife areas that are unused so that the prairie can help change that environment.**

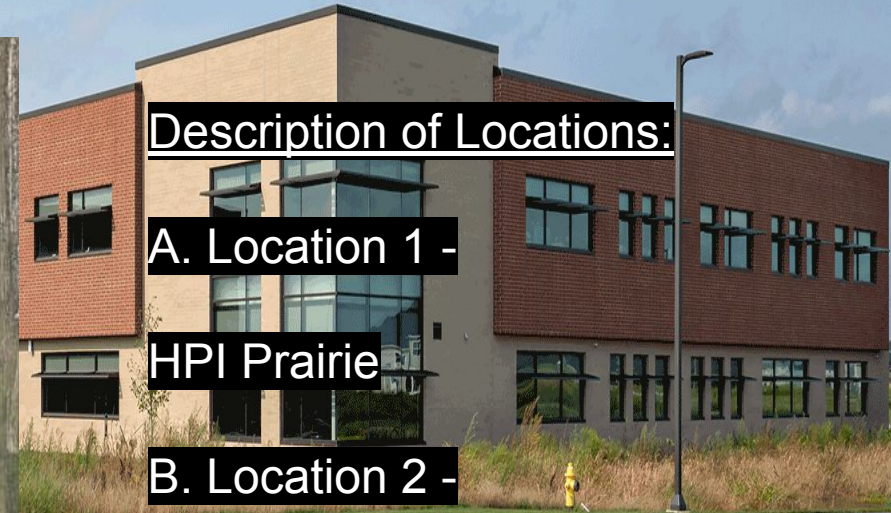
Questions? Collaboration? Thank You.

Thanks to the help from our teacher Mrs. Boros, and thanks to NASA and Globe for letting us do our project.
Any Questions for us?????????



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Map of our Research Locations



Description of Locations:

A. Location 1 -

HPI Prairie

B. Location 2 -

HPI Bioswale