



# ***How does the surface temperature of the prairie compare to that of the bioswale?***



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# Our Team

*Photographer*



*(Katie Chen)*

*Experimenter*



*(Lily Demecs)*

*Data Recorders*

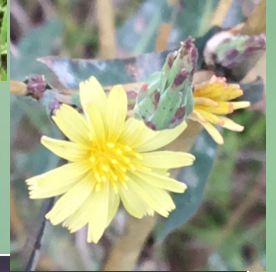
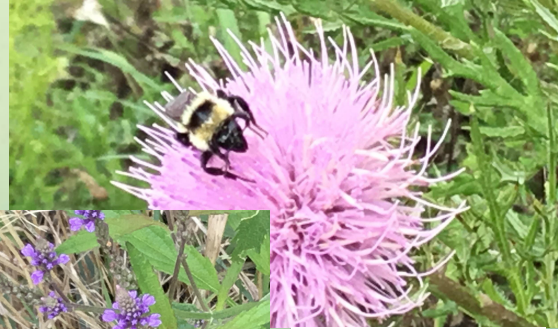


*(Dima Ishkhatem &  
Bentley Ray)*

# Why are Native Prairies Important?

- Native Prairies are important because they provide homes and food to the native plants and animals of an area.
- Native Prairies also require little to no maintenance, which means no hard work is needed. But, you should burn it every 3 years in order to maintain plant and animal diversity.
- Prairies even help with pollution, the many plants filter carbon dioxide (CO<sub>2</sub>), into oxygen. This helps stop global warming by lessening the amount of CO<sub>2</sub> put into our atmosphere.

(Side note- you can help out too by planting a pocket prairie in your own yard!)





# Research Question & Hypothesis

RQ: How does the surface temperature of the Prairie compare to that of the Bioswale?

Hypothesis: If we test the surface temperature of the Prairie and the bioswale, we think that the bioswale will be cooler than the prairie because the plant cover is denser (plants keep things cool) and water from the storm drain comes to the bioswale.

# Variables

- **Dependent Variable:**
- **Surface temperature.**
- **Independent variable:**
- **Locations are prairie and bioswale**
- Constants-
- Same time of day
- Same tools
- Same process



Our Locations

<- The Big Prairie



The Bioswale

# Map of our Research Locations



## Description of Locations:

A. Location 1 - Prairie

B. Location 2 - Bioswale

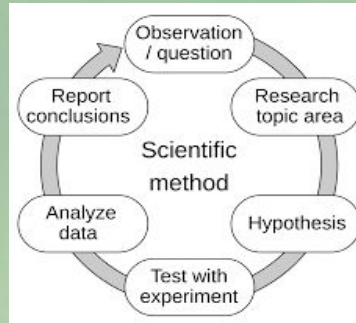
# Materials

- Infrared Thermometer
- Clipboard
- Sky Chart
- Pencil



# Step by Step Procedures:

1. Go to the school prairie to take the surface temperature with the infrared thermometer.
2. Set the thermometer to degrees celsius.
3. Take 9 surface temperature measurements 5 steps away from each other all in a straight line
4. Hold the thermometer shoulder high and aim it at a right angle to the ground.
5. Click the trigger to turn the thermometer on.
6. And then click it and record the 9 collected temperatures on the table.
7. Calculate an average by adding up all 9 numbers and then divide by 9.
8. Record the average.
9. Repeat steps 1-8 for the Bioswale.





# Weather Conditions on the Day of Data Collection

## Day 1:

- Windy
- Cold
- Sky color: Milky
- 100% cloud coverage
- Clear
- 

## Day 2:

- Sunny
- Windy
- 10% cloud coverage
- Unusually clear
- 

## Day 3:

- Sunny
- Windy
- Chilly
- Cloud coverage 50%
- Clear

Day 2



Day 1



Day 3



**Data** - *How does the surface temperature of the Prairie compare to that of the Bioswale?*

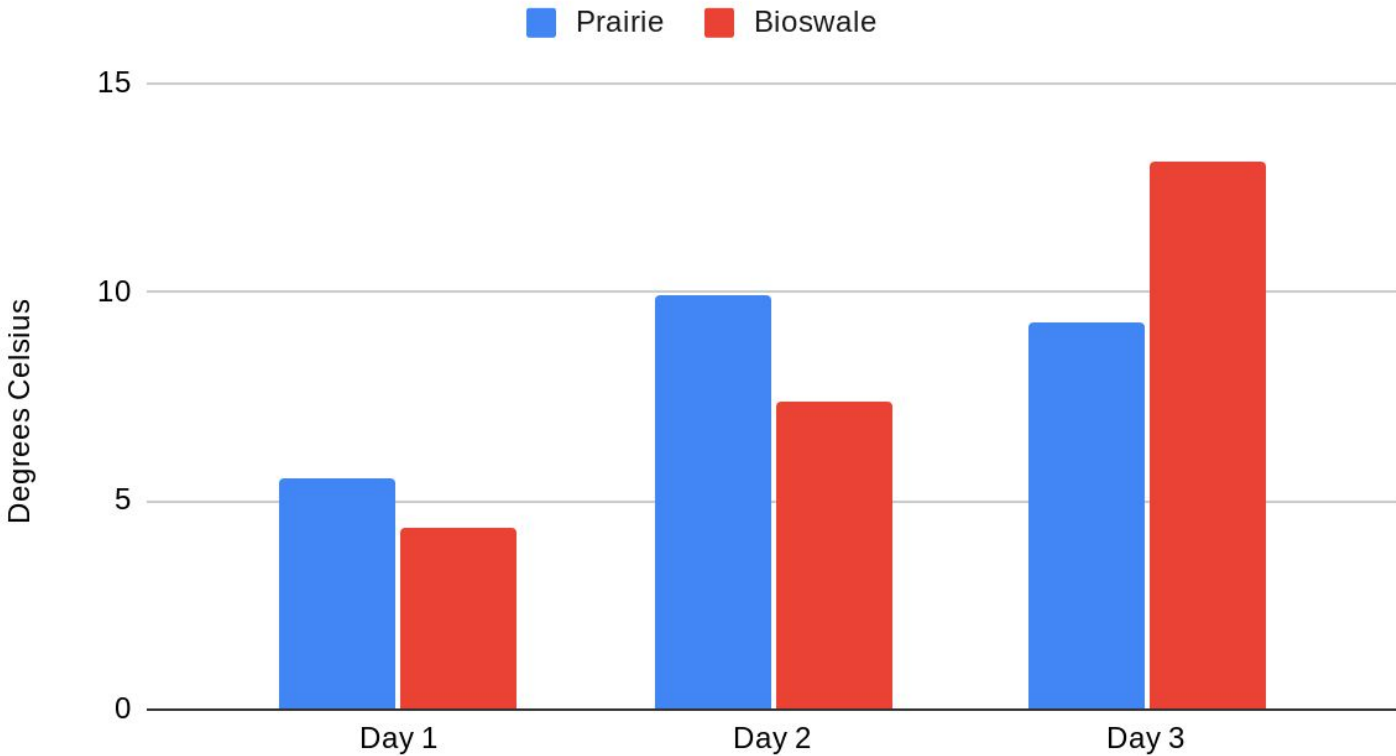
*Average Surface Temperatures*

	Day 1	Day 2	Day 3
Prairie	5.54	9.93	9.26
Bioswale	4.38	7.35	13.11



# Results: How does the surface temperature of the prairie compare to that of the bioswale?

## Average Surface Temperatures



Even though the bioswale graph looks higher, when you calculate the averages, the prairie is higher than the bioswale.

# Conclusions:



## We found out that...

- The surface temperature of the prairie is hotter than the surface temperature of the bioswale.
- This may be because the water in the bioswale evaporates, making the air and surface more cool and moist.
- And the prairie does not have a very moist surface to keep it cool, so the surface temperature of the prairie is hotter than the bioswale.
- Our hypothesis was correct. ✓



CONCLUSION



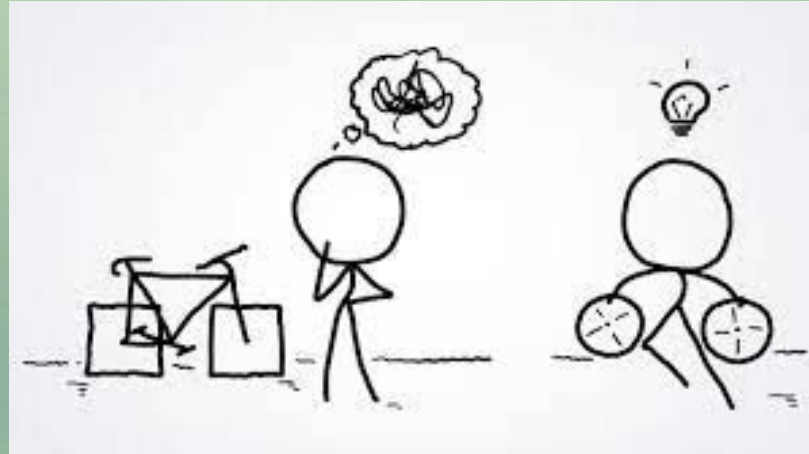
# Discussion: What does this mean?

**This data is important because it can help us identify what spots are too hot, to prevent global warming! Global warming has been causing many problems across the Earth, and we should do something to help stop it. Finding the surface temperature can help us find the spots that are hot and we should then find ways to make them cooler.**



# Discussion: Possible solutions!

- Plant **native** plants to shade unusually warm places and filter CO2 (Carbon Dioxide)
- Plant more pocket prairies to cool down backyards.
- Check the school grounds (and your own back/front yard) surface temperature monthly, to make sure the temperature is normal.
- Our main goal is to help prevent the affects of Global Warming on our environment.



# Questions? Collaboration? Thank You.

- Thank you NASA and Mrs. Boros for hosting this super fun project!
- Now we will answer some questions
- Thank *you* for listening, and we hope you learned something new.
- If there are any questions for Mrs. Boros, her email is listed below!

*-The Leopards*



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