



BUTTERFLY SPY

Classroom Connections

Thank you for participating in our Butterfly Spy program. This document will help you access the data you gathered and use it in the classroom. We have included some suggestions to help you analyze your data, but there are many ways to go further with your discoveries – feel free to be creative!

BUTTERFLY SPY AND NGSS

Data collected during the Butterfly Spy program may be used to address a variety of educational standards, including the Next Generation Science Standards (NGSS). We designed the program to focus on the NGSS crosscutting concept of **patterns**.



ACCESS YOUR SPY DATA

Open pdf: "Fusion Table Instructions." Follow the steps to access data from your class visit. **We recommend you download your class's data since we will need to periodically clear the table and make room for new data.** Instructions on how to download your data can also be found in the pdf.

DISPLAY YOUR SPY DATA

After you have accessed your data, you can analyze it with your class. You may choose to **display** your data. Here are some suggestions:

- **Numbers** - Display the numbers collected by each group for the class to see. You can also add up the results the groups got for each particular action to get a total number for each of the four actions: flying, resting, eating, chasing.
- **Graph** – create pictograph (or other visual representation) with your class to help visualize how many times you saw the butterflies doing each of the four actions.

Show the butterfly action pictures (found on the web page) as you discuss your results.

ANALYZE YOUR SPY DATA

Learning Objective: Notice patterns of butterfly actions and discover how these actions help butterflies meet their survival needs.

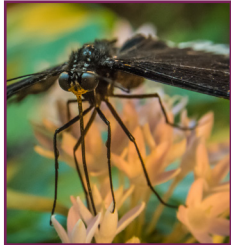
Some **questions** you may want to think about together (or in groups):

- What actions did you see the butterflies doing?
- Were you surprised by any of the things you saw the butterflies doing?
- What actions were they doing the most? What were they doing the least? Why do you think they were doing these things?
- What are the things you need to survive? Do you think butterflies have the same survival needs? Why or why not?
- Compare your results to those of other classes or groups. What is similar and different? Why do you think there are these similarities/ differences?



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To help your students connect butterfly needs with the actions they saw, here is some background information:



Chasing – Butterflies chase each other to defend their territory or find a partner to make more butterflies with!

Eating – All living things need energy to survive. Butterflies have a special straw-like tube (proboscis) that helps them feed on fruit, nectar and pollen from flowers. Where did you see butterflies eating during your visit to the Butterfly Encounter?

Resting – Butterflies do not sleep as we do - they always have their eyes open! They rest at night or when it's cloudy or cool. Sometimes they rest for longer periods of time (this is called roosting). All butterfly species roost overnight and during wet or chilly weather. It is important that they take shelter in a safe space when they roost. Some butterflies roost upside down and others roost in large groups. Why do you think it is important that butterflies get rest? Can you think of other animals that have interesting ways of resting (hibernation, etc.)?

Flying - An adult flying butterfly is the final stage of a butterfly's life cycle. This stage is very short - most butterflies only live for a week or two. Butterflies fly to find a partner to make more butterflies with, and then to find a place to lay their eggs. While they are busy searching for a mate and laying eggs, they also fly to their food sources, often flowers and fruit. Some butterflies fly very long distances, migrating to escape the cold weather. Monarchs, for example, travel as many as 4,000 miles on their round trip journey to California, Florida or Mexico. What body parts do butterflies have that help them fly? Why do you think butterflies might need to fly?

Even though we saw the butterflies doing some actions more often than others, all of the actions are important to butterfly survival!



ADDITIONAL RESOURCES

Butterfly Nectar Sources: Nectar-Rich Connecticut Native Plants https://www.nrcs.usda.gov/wps/portal/nrcs/detail/ct/technical/ecoscience/invasive/?cid=nrcs142p2_011119

Where to Buy Butterflies

http://www.butterflybreeders.org/public/butterflies-where_to_buy.cfm?country=USA

Monarch Curriculum

<http://www.nwf.org/Eco-Schools-USA/Our-Partners/LEGO/Monarch-Mission-Lessons.aspx>

About the App

The 'Butterfly Spy' App was created by high school student interns in the Mobile Apps for Hartford program! To find out more information about their work, click here: <http://www.trincoll.edu/NewsEvents/NewsArticles/pages/MobileAppsForHartfordCTScienceCenterSummer2017.aspx>