

Sussex School Spider Investigation

Target Grade Level: 4th-5th

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UNIVERSITY OF MONTANA GK-12 PROGRAM

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II. Title of investigation: Sussex School Spider Investigation

- Inquiry questions: Form hypotheses about what types of spiders are found in the schoolyard and where in the schoolyard they will be found
- Curriculum Objectives: Science as Inquiry; Life Science (characteristics of organisms, organisms and their environments, classifying organisms).
- Ecological Themes: By surveying spiders in the schoolyard, students will gain an understanding of the diversity of the resident spiders and their specific habitat requirements. This will help the students to understand the necessity of different habitats to be conducive to diversity.
- Grade Level: 4th and 5th grades
- Time Required: 2 hours

III. Background (for teachers as well as presentation to the students):

Before the outside investigation: Discuss with the students the relevance of gathering data on the diversity of species found in an ecosystem (for example, a schoolyard). Ask them why we would want to know about the different resident spiders and their habitat requirements. Follow with a background discussion about the differences between insects and spiders, and introduce students to the 6 types of spiders commonly found in Montana that are on the dichotomous key. Point out that the different types of spiders have different habitats and different physical characteristics, and these attributes can be used to identify them. Additionally, discuss what effects the different spiders have on the environment (what do they eat, what eats them, etc.) Ask students where in their schoolyard there is good spider habitat (tall grass, bushes, old logs, trees, next to buildings, etc.). If available, provide students with living examples of the different types of spiders to assist with identification.

Outside investigation: Students will go out into the schoolyard and choose a place to make a transect. Help them choose a spot that will have good spider habitat at one end and poor spider habitat at the other. Assist them in using the information they have learned to make hypotheses about where spiders will be found and what types of spiders will be found. Help them use the hula-hoop to sample the transect at 0 feet, 12 feet, and 24 feet. The spray bottle can be used

on the “mist” setting to spray the area to look for webs. The sweep net can be swept through tall grass or bushes.

Data sharing: Have students report their data to the rest of the class. Have them tell what their hypotheses were and whether or not they were correct.

Discussion about the data: Have the students reflect on the differences among habitat types for each spider and help them discuss whether it is important to have a diverse ecosystem and whether or not that means the ecosystem is healthy. Then discuss what the spiders do for the environment (i.e. eat mosquitoes, feed other animals). Then ask what would happen if there was only one type of spider in the schoolyard.

IV. Safety information: let the students know if there are any poisonous spiders that could be encountered and show them what they look like. Advise them not to touch the spiders or their webs.

V. Materials list:

1. Pictures of spiders (transparencies, field guides, handouts)
2. Spider dichotomous key
3. Magnifying glasses
4. Data sheet and clipboard
5. 50 ft. measuring tape
6. Spray bottle filled with water
7. Sweep net
8. Hula-hoop or quadrat

VI. Procedure for students:

- Preinvestigation work: First, discuss the importance of the data collecting and identify the different types of spiders that may be in their schoolyard. Second, they should make hypotheses on what types of spiders they may find, where they may find them and why. Lastly, the instructions should be verbally outlined as well as the safety issues. They will also have a handout with instructions. Rules for outdoor behavior should also be conferred prior to the investigation.
- Investigation work:
 1. Initially, the students will record the weather, time and members of their group. At each sampling area the students will look for and record the number and types of spiders found within their quadrat as well as the webs. They will then draw a picture of the area inside the quadrat to assess the habitat (amount of vegetation and types, water, etc.).
 2. The data can be presented with a graph or maybe a picture, anyway the teacher finds appropriate.

3. Evaluate hypotheses and see if they were able to disprove them. Explain that hypotheses can never really be proven only disproved. Discuss whether or not they think their schoolyard has diverse habitats and species of spiders from their results.

- Instructions for post-investigation reflections and assessment.

Have the students reflect on the differences among habitat types for each spider and help them discuss whether it is important to have a diverse ecosystem and whether or not that means the ecosystem is healthy. Then discuss what the spiders do for the environment (i.e. eat mosquitoes, feed other animals). Then ask what would happen if there was only one type of spider in the schoolyard. Have them write in a journal or draw pictures etc. exhibiting what they have learned from this investigations and perhaps they can make a portfolio of all of their investigations, results and reflections.

VII. Evaluation/reflection of how it went:

This was the first investigation and though it was a very good one, the students were somewhat disengaged. Perhaps they needed to have a sense of ownership of the investigation to really see the relevance. Since this investigation, we have established individualized inquiries where the students have a personal investment in the findings.