Lab 1 Response: Introduction to the Scientific Method, Information Literacy, and Data Literacy

Part 1: Design a Scientific Experiment

1. Look at the four questions below and select one.
	* Do mosquito repellent plants work?
	* Are there more invasive species in the Chicago River than in Lake Michigan?
	* Is plastic harmful to organisms?
	* How does oil impact plant growth?
2. Which question did you select?
3. Identify at least three problems with the focus, measurability, comparison, or control.
4. Rewrite the question so that it is an interesting, focused, and scientifically plausible question that comes from a biological perspective.
5. Consult Wikipedia or a reference database from your college library about your research question listed above. Identify the article you read with a title and link.
6. List 5 keywords from that source that you could use to search for focused information related to your question.
7. Using at least some of the keywords you listed above, do a search and choose a source that would help you to learn more about your specific topic. Write the keywords you used, a title and link for the source you selected, and summarize the information you found helpful in it.
8. Now write a possible hypothesis to answer your research question, using the If\_\_\_\_\_\_ then \_\_\_\_\_ construction:
9. Design an experiment that would produce data that supports or rejects your hypothesis. Explain what would happen in your experiment (i.e., who would conduct it, what would happen, over what length of time). Identify the independent variable, the dependent variable, and the controlled variables.
10. Give one type of qualitative data and another type of quantitative data produced by the experiment you designed that could be used to support or reject the hypothesis.

Part 2: Analyzing Experimental Data

Because the experiment that you designed has not collected data, here is a sample table describing bird strikes on the COD campus by type of bird during Fall 2023.

**Table 1.3. Bird strikes by type of bird on the COD campus, Fall 2023.**

|  |  |  |
| --- | --- | --- |
| **Type of Bird** | **Number of Strikes** | **Percentage of Total** |
| Thrush | 21 | 24% |
| Warbler | 38 | 43% |
| Robin | 7 | 8% |
| Cardinal | 2 | 2% |
| Sparrow | 11 | 13% |
| Hummingbird | 1 | 1% |
| Junco | 2 | 2% |
| Unknown | 6 | 7% |

1. Using the table above, plot a bar graph showing the number of strikes by type of bird. Include the following: units of measurement (where applicable) and labels for the x and y axes. (The figure number and caption have been provided.) Make sure that your independent variable is on the x-axis and the dependent variable is on the y-axis.



**Figure 1.7:** Bird strikes by type of bird on the COD campus, Fall 2023.

1. Look at the experiment that was designed to learn if decals applied randomly to windows were as effective in preventing bird strikes as those applied diagonally (found in Lab Activity 1). How could you improve the experiment as described? List three concrete ways you could improve on the experiment that would make the data more accurate in supporting or rejecting the hypothesis.