Does Rain Affect the Numbers of Juncos at Feeders?

By SooBin, Grade 8
Tualatin Valley Junior Academy
Hillsboro, Oregon, Mr.Kahler

Question

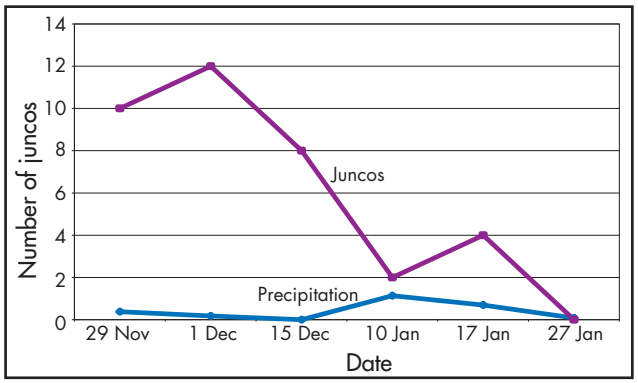
Do juncos in Oregon prefer sunny days or rainy days?

Introduction

One Sunday morning, I looked out the window. I saw it was a rainy day. I usually eat a bagel for breakfast, but I noticed that we were out of bagels. So, I had to go to the market to buy some bread. QFC mall is near my house, so I usually walk, but this time I felt like I didn't want to go out because it was a rainy day. According to my experience, I wondered if birds can feel the same as me. Do they not want to go out on rainy days too? I wondered if birds go out on sunny days rather than rainy days. Or do they like rainy days better and so go out more often then? I wondered if birds show up more often on sunny days or rainy days. But I wanted to research more specifically, so I chose the Dark-eyed Junco and researched about it more deeply. I would like to discover whether the junco prefers sunny days or rainy days by counting the number of these birds.

Hypothesis

Thinking about my problem and observing the Dark-eyed Junco, I have formed my hypothesis if it is a sunny day then there will be more birds than on a rainy day. More importantly, I would like to know if juncos like sunny days or rainy days through counting the number of birds. My independent variable is the number of juncos, and my dependent variable is the amount of rain fall. In addition, my null hypothesis will be if it isn't a sunny day or rainy day then there will be same number of birds. In order to test my hypothesis, I will notice how rain affects the number of Dark-eyed Juncos.



Materials & Methods

In order to start my observation, I have to prepare before going out and counting the numbers of birds. I will need a sheet of white paper and binoculars, and any kind of bird book that tells all the kinds of birds and has pictures of what they look like. I prefer to use *Birds of North America*, published by National Geographic, so that I may distinguish between juncos and birds that look like juncos. And on the sheet of paper I will write the date and the amount of precipitation, and the number of birds, so that when I observe, I may record it. And I will need a rain gauge to record how much rain falls each day, or I use http//www.weather.com/services/?from=globalnav&ref=/a weather site that measures rainfall. To attract the birds, provide seeds, a little bird feeder, and a tree with branches, like a nature spot so that they can be comfortable in their environment. Each time, after I finished observing and recording, I used Microsoft Excel and entered my data. On the last day that I observed, I finish recording, and made a graph using Excel. Every time I finished observing, I am sure to record my data on a sheet of paper.

Results & Analysis

Through observing and collecting data, I observed a pattern in the data. On days when there is little or no rain fall, there are many juncos, but when there is some rainfall there are few juncos. Look at the included graph; you will see two lines. The

continued on page 10

Bluebird
by Zack, Grade 7, Tualatin Valley Junior Academy, Hillsboro, Oregon
Mr. Kahler

continued from page 9

lines tell us about the number of juncos and the amount of precipitation. If the lines were close together, my hypothesis would be proven, false. When the lines are far apart my hypothesis is proven true. For the main part, I was seeing responses in increase of juncos according to decreases in the amount of precipitation.

Conclusion

According to the results collected, the pattern of my chart proved that my hypothesis is correct. However, my chart shows there were some exceptions. It proved that when there are rainy days the number of juncos are more than on sunny days.

The "temperature" helped me develop my experiment. When I was in Korea, I learned that after the rain, the temperature is higher than during rainfalls. So I thought, I wonder if during times of high temperature, the juncos would be more active. During sunny days the temperature is high, because sun produces heat and humidity. That is why many Dark-eyed Junco show up. So maybe the rain is also related to temperature.

Bibliography

Pyle P. "Dark- eyed Junco." Chipper Woods Bird Observatory October 1997. 10 Mar. 2006 <http//www.wbu.com/chipperwoods/photos/junco.htm>.

Simons, G. *Birding Stokes Birds* 2002. 10 Mar. 2006 <http//www.stoKesbirdsathome.com/birding/behave/behavpages/behav110.html>.

Gough, G. "Dark-eyed junco Junco hyemalis." USGS 1966. 10 Mar. 2006 <http//www.mbr-pwrc.usgs.gov/id/framlst/i5670id.html>

SUGGESTIONS FOR CREATING A SCIENCE REPORT

- Follow a simple and logical sequence in setting up your report.
- Try to be concise.
- Explain your thinking in designing the project. Tell how you became interested in your topic. Explain how you decided which data to collect and how you used that data to answer your driving question.
- Include all of the data which you analyzed, manipulated, or used to create graphs.
- Label your charts or graphs thoughtfully.
- If you used any statistics, explain why you chose to use that statistic, and show how you did your calculations. Check your math. Avoid using methods you do not understand.
- In your discussion section, report how your thinking evolved as the project went along.
- Note any problems you experienced, and explain what you did to overcome them.
- Allow your classmates to read your report; ask them for their opinions, and for suggestions for improving it.

EXAMPLES OF REPORT STYLES

- Title
- Introduction
- Materials and Methods
- Results and Analysis
- Discussion and Conclusions
- References

Flame-colored Tanager
by Clarisse, Grade 4, The Friends School of Atlanta, Decatur, Georgia
Ms. Morris

USE OF STATISTICS IN REPORTS:

WIKIPEDIA defines statistics as a mathematical process pertaining to the collection, analysis, interpretation, explanation, and presentation of data. There are many kinds of statistics, each with a purpose and set of rules for proper application. Misuse of statistics can produce serious errors in the interpretation of data, leading to inappropriate conclusions.
It is suggested that students engaged in science projects avoid statistics that they may not understand. Future *BirdSleuth Reports* will address this topic in more detail.

SOME COMMON PROBLEM WORDS IN REPORTS

there, their
to, too
affect, effect

A NOTE FROM THE SCIENCE EDITOR

Congratulations to everyone who contributed to this issue of *BirdSleuth Reports*. I loved your creative questions and all the thought you put into testing your hypotheses!

Publishing your work is an exciting step in the scientific process. But did you know that for scientists, it is also a challenging step?

After scientists submit an article for publication, it goes through "peer review." Other scientists decide whether to accept it or ask for revisions. They may even reject some articles because of problems or because there is only enough room to publish those with the most new information.

What might you think about if you were a scientist reviewing *BirdSleuth Reports*? What did you think was great and what might you have done to make it even better?

Did the study rule out factors that could produce a result just by chance? If a bird is choosing different foods placed on the left and right tray of a feeder, how do you know the bird didn't just prefer the left side? Did you notice the clever way that one student ruled out that possibility?

Do you have any questions about whether the methods were safe for the birds? If a study used beer to see if birds could taste food, you might ask, "Is alcohol necessary to test this idea? What about using grape juice?" That would be better, since birds (like people) can become drunk from ingesting beer—making it harder for birds to stay alert near predators.

Did the data analysis make sense? One group of students used Raven software to see how well an imitation matched a real call. Great idea—that's what scientists use too.

It is also impressive that some of you tested your results with statistics—something I didn't do until college. But look out! There are actually many kinds of statistical tests. Part of a scientist's job is to decide which one to use for each situation.

You can use the chi-square test to see if **percentages of counts** from two treatments are different enough that they probably did not happen by chance. For example, you could see if birds responded more often to recordings of a real call than to recordings of an imitated call.

If you're comparing a **feature** of two things, such as the pitch of imitated calls and real calls, you would use a different test called the T-test.

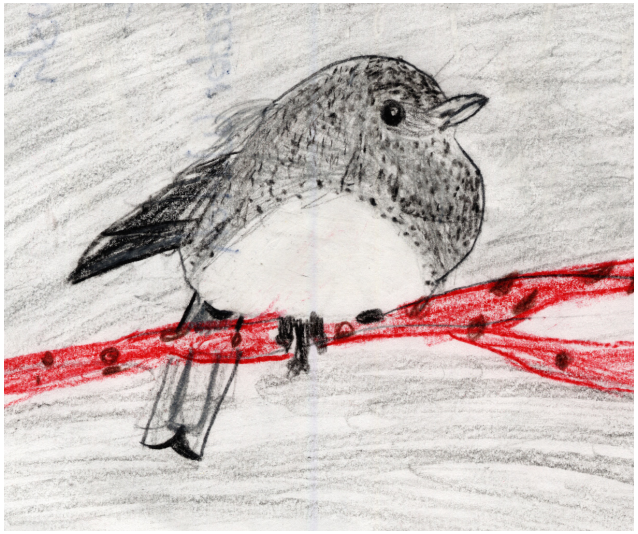
Not sure what to use? That's OK. Instead, try to think of other ways, such as graphs and charts, to help you consider the data.

What else do you notice about the studies in *BirdSleuth Reports*?

I hope you found it fun to be a bird sleuth. With your reports, you've showed that **you have several traits in common with scientists—**curiosity, creativity, and thoroughness.

Another trait scientists have in common is that they don't give up. They continually find ways to improve their efforts, and like you, they get better and better each time. **Keep up the great work!**

—Miyoko Chu, Science Editor, Cornell Lab of Ornithology



Dark-eyed Junco
by Kathryn, Grade 4, McKenna School
Massapequa Park, New York , Ms. Markowski

American Crow
by Raghib, Grade 3, PEARLS Elementary School
Yonkers, New York , Ms. Scaglione

Red-bellied Woodpecker
by Kari, Grade 4, Bethany School, Glendale, Ohio, Ms. Mellea

READER AND EDITOR COMMENTS

Please feel free to send comments and questions related to the reports or other the materials published in BirdSleuth Reports.

Question:

Should all reports be submitted in a standard format?

It is not required that a report be in a particular format. One style of organizing a report is shown on page 10, but if a student wishes to do something different, that is her choice.

For instance, one student may design a project to collect new data. Another student may not actually gather her own data through observations, but may search eBird's database in an effort to answer some question.

And some students may choose to write a description (perhaps of a period of bird watching) in a narrative style rather than structure their information into a table.

What is most important is that the report writer strives to communicate clearly, demonstrates that they have been thoughtful and logical, and utilizes data in constructing an understanding of what was studied.

Editorial Policy

BirdSleuth Reports is intended to be a publication of student work, focusing on science projects involving birds and bird observations. Material submitted will also be considered for publication in our printed magazine, *Classroom BirdScope*.

For the most part, what a student submits is what will appear in this publication. An editor may make small changes or corrections. Sections of text, charts, graphs, and photos which may have been part of the original submission may be omitted. However, what does appear will be the work of the student, and not substantially changed by the editors.

It will be to the student's advantage to have her/his report reviewed, and revisions made, ***before*** it is submitted. We encourage peer review. If an adult such as a teacher or parent is involved in the review, we hope that the adult will allow the student to control the process leading to the final version of the report.

Painted Bunting
by Akruti, Grade 7
FDR Middle School, Bristol, Pennsylvania, Ms. Mueller

Can you guess what kind of bird this is?
by Emily
Grade 4
McKenna School
Massapequa Park
New York
Ms. Markowski

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Special thanks
Miyoko Chu, Susan Spear

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