

USGS Data Exploration Unit: Bald Eagle Activity 1 Student Workbook

Hypothesis for Bald Eagle Activity 1

You will be given a dataset containing data for DDE concentrations in bald eagle eggs collected in the US from 1969 to 2000. What is the hypothesis you will investigate?

How does your hypothesis specifically define your investigation?

Species = _____

Matrix (body part) = _____

Location = _____

Harmful concentration of DDE = _____

Time frame = _____

Wiemeyer, S.N. et al., 1984. Organochlorine pesticide, polychlorobiphenyl, and mercury residues in bald eagles, 1969-1979, and their relationship to shell thinning and reproduction. Arch. Environ. Contam. Toxicol., 13, 529.

Activity Questions

These questions refer to steps you will follow as you manipulate and graph your data in Excel. Answer each question after you complete the section to which the question refers.

Section A. Compiling and sorting your data

1. What records did you remove when you sorted your data by species? Why did you remove these records? What type of bias would you have introduced if you kept the records?

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Section D. Graphing your results

1. Fill in the table below based on your calculations in section C.

Bald Eagle Activity 1: Average DDE in bald eagle eggs by year			
Year	Average DDE (ug/g ww)	N	States represented in sample
1969-1974			
1975-1977			
1978-1979			
1980-1981			
1982-1983			
1984-1986			
1989-1991			
1992-1993			
1994-1996			
1997-2000			

2. After you have finished making your graph in Excel, print out your graph and attach it to this workbook.

Discussion Questions

Refer to the workbook, graph, and datasheet from Bald Eagle Activity 1 and answer the following questions. You may add additional sheets of paper as needed.

1. Does your graph support your hypothesis for bald eagle Activity 1? Why or why not?
2. What does your graph suggest about the effectiveness of the DDT ban in reducing the concentration of DDE in bald eagle eggs?
3. Look at the value for N for each year group. Do different year groups have relatively similar values for N? How might differences in N between year groups affect the accuracy of the averages you calculated? Based on the value of N for each year group, what year groups do you think have averages that are more likely to be accurate and what year groups have averages that are less likely to be accurate?
4. During what year groups does your bald eagle graph show a trend similar to that seen in the osprey graph? During what year groups does your bald eagle graph show a trend different to that seen in the osprey graph?
5. Look carefully at the data records you used to make your graph. Refer to the worksheet, “baldeagle”, that contains the records you organized and from which you calculated your year group averages. What do you think might account for the difference in the osprey and bald eagle trends? Is there anything that sticks out about the data collected after 1986?
6. Do you think the trend you observed in the bald eagle graph represents an accurate trend across the United States?
7. Suggest a new hypothesis to explain the high DDE concentrations in bald eagle eggs after 1986.