Audubon Bird Count

1900 – 2014

Important Note: The Audubon Bird Count website currently has a bug. If you try to access historical data by species for any years later than 2014, the query will fail. You may be able to access specific counts or data from other parts of the site from more recent years, but for species data for this project, we recommend using 1900-2014 as your date range.

Data Link:

https://netapp.audubon.org/CBCObservation/Historical/ResultsBySpecies.aspx?1

Species to investigate: See the group assignments handout to determine which species should be your group's focus.

Introduction/Background

From Dec. 14th through Jan. 5th of each year, thousands of volunteers throughout the Americas brave snow, wind, or rain, and take part in the annual **Audubon Bird Count**. The data collected by observers over the past century have allowed Audubon researchers, conservation biologists, wildlife agencies, and other interested individuals to study the status of bird populations across North America. It has provided a picture of how the continent's bird populations have changed in time and space over the past hundred years. Audubon's 2014 Climate Change Report is a comprehensive, first-of-its kind study that predicts how climate change could affect the ranges of 588 North American birds. Of the bird species studied, more than half are likely to be in trouble. Models indicate that 314 species will lose more than 50% of their current climatic range by 2080.

Directions for Big Data Days 2022 Bird Projects

Your group has been assigned two specific species to investigate. National data has been provided in the linked excel files and Michigan data is available on the Audubon site. Consider the questions listed below and prepare your analysis according to the Exemplar template provided for Big Data Days 2022 generally.

Questions

1. Which species, if any, are increasing in numbers over the last 115 years of the Audubon Bird Count? Which species, if any, are decreasing?

2. If the data is available, compare the given national data to the Michigan data available on the Audubon site. Do you see differences? If so, how might they relate to the rest of these questions.
3. How can you explain these trends for each species?
4. Do these trends show global climate change? Why or why not?
5. Are there any outliers within your data? How can you explain why they occur?
6. How confident are you that the data represents what's "really happening"? What additional information would you need to confirm your theory or theories?
7. Are there other data you would like to see?
8. What can you conclude from your research?

Notes about the data files

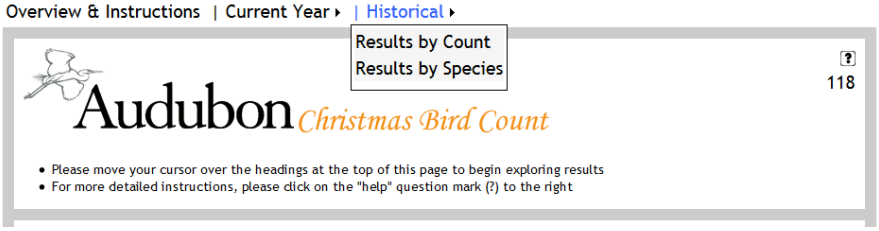
As mentioned, the Audubon data is based on counts of sightings of specific bird species. Here are some keys to understanding this data:

- The fields are laid out as follows:
  - Year 1 is the year 1900. Year 115 is the year 2014.
  - The "Number" field is the raw number of birds that were counted that year.
  - The "Number/Party Hours" field is the data that is normalized for year-on-year comparison. It is the "Number" field divided by the number of hours the people doing the counting (the "Party") spent observing.
  - The other data relates to the actual parties reporting.
- For several of the species, some of the early data (1st 10-40 years) is "noisy" or contains zeros (usually due to party hour data issues). In these situations, consider analyzing your data both with and without the "noisy" period to see what impact it has.
  - Also, remember to remove the zero years so that they don't impact the analysis of your scatter plots (not collecting data is different than there actually being no birds).

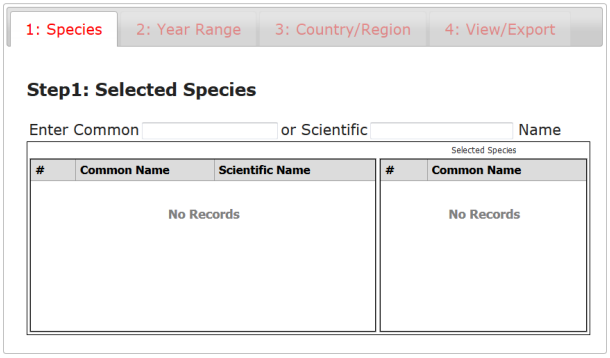
The Audubon website is at the link below, but the historical data is only accessible up through 2014. The national numbers are already in the Excel files that linked on our Big Data 2022 page. You can get the same information for Michigan specifically by following the directions below. The more recent data is not downloadable on the "Historical Results By Species" page, but may be accessible by "count".

Directions for accessing the site to get Michigan-specific data or other information

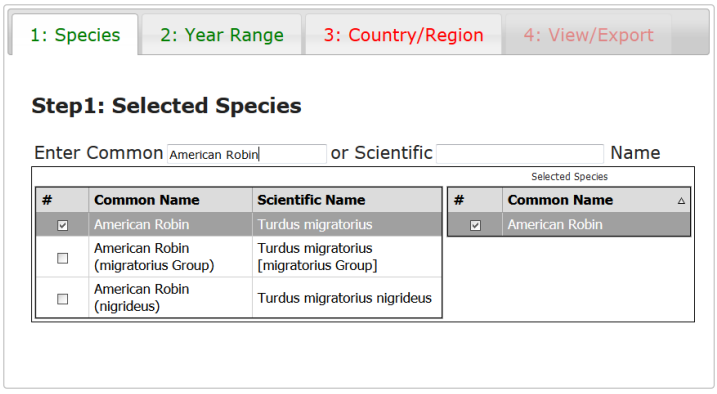
1. Go to the Audubon *Christmas Bird Count* page annotated in the Data Link above.
2. Pull down the Historical tab.



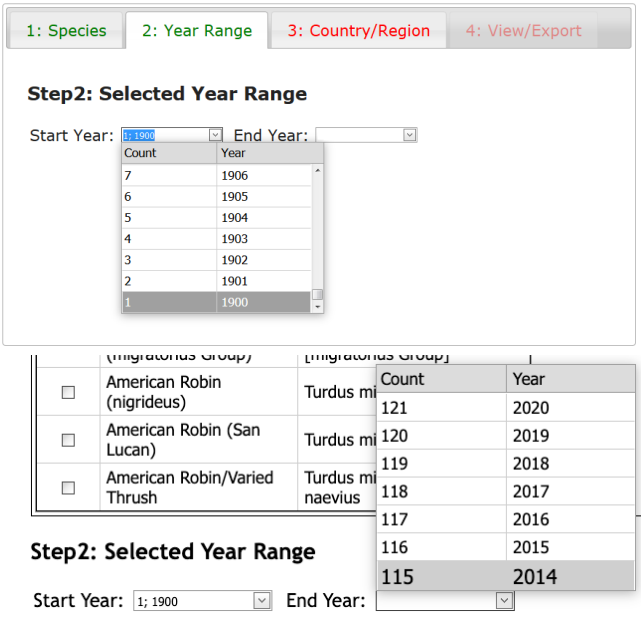
3. Select Results by Species.



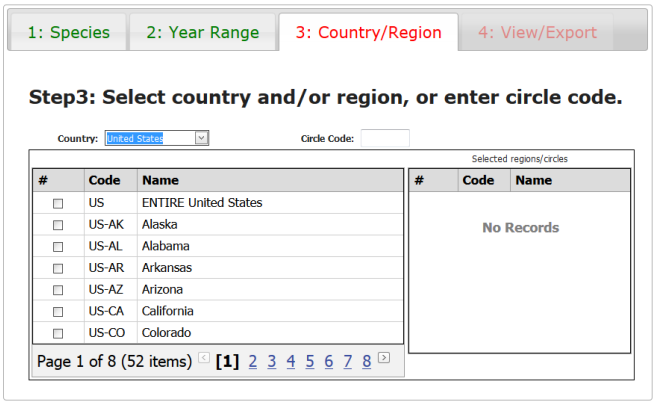
4. Type in the species you are studying. It will take a few seconds to load the species and, for some, there will be a number of subspecies. Simply select the primary species for your research.

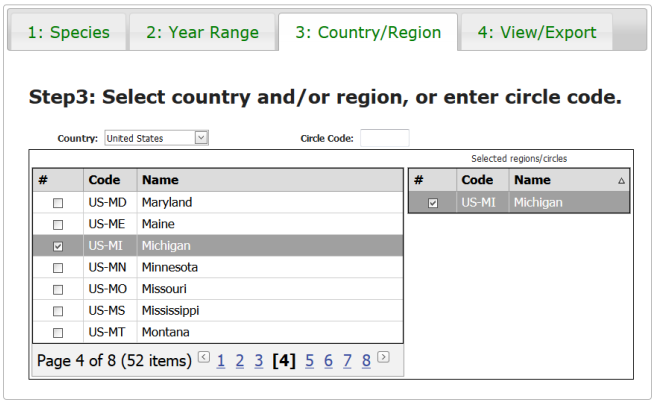


5. Select the Year Range (from 1900 to 2014).

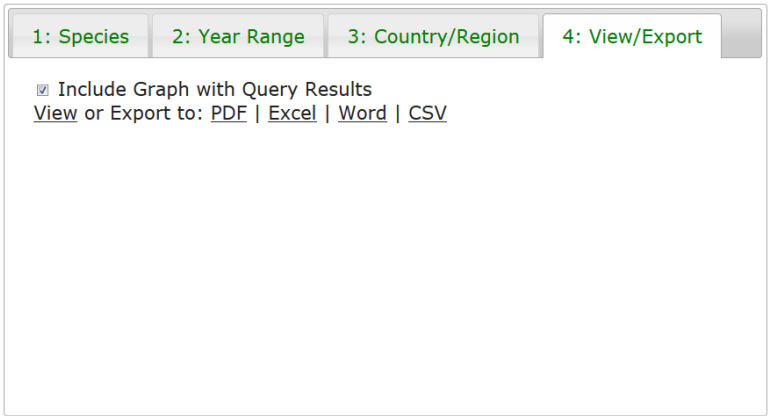


6. Under the Country/Region tab, pull down and select the United States, click on 4 and select Michigan.





7. Finally, to view the file, click on View/Export and select View.



Then you can export the results as an Excel file, as follows:

On a Chromebook …

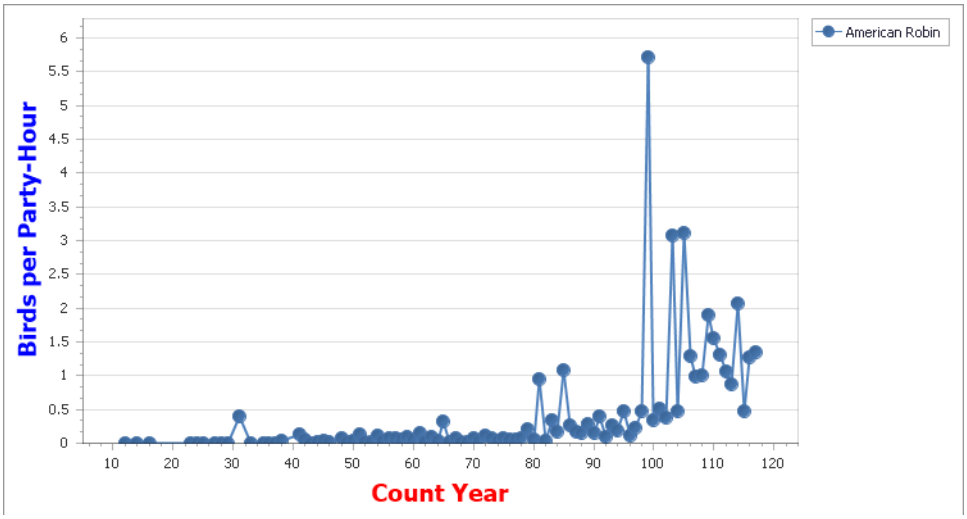
a. Click the "Excel" button to download the .xlsx file.
b. A button with a number (the number of files that have been downloaded) will appear in the lower right of the screen. Click it to see the list of downloads.

c. Make sure you are already logged in to Google Drive. Then double click the downloaded file you want.
d. Once the file opens in Google Sheets, click the "Share" button and choose "Save As Google Sheets" to ensure that the work you do will be saved as you go.

<u>On a Windows or Mac device</u> …

a. Click the "Excel" button to download the .xlsx file.
b. Choose a folder and filename where you will be able to find the file on the computer you are using (flash drive, downloads folder, or other easy to find place).
c. Either open the downloaded file in Excel on your computer or upload it to Google Drive using the "New" button in the upper left of your Google Drive page and then "file upload".

8. Scroll down the page and the graph will show **Count Year** vs. **Birds per Party-Hour**. You will need to define these axes as a part of your presentation at the end of the day.



9. You can combine species and graph them together by returning to the Species tab.
10. Identify trend lines by determining, with your partners, the general tendencies illustrated for each species.

References

http://www.audubon.org/conservation/history-christmas-bird-count
http://netapp.audubon.org/cbcobservation/historical/resultsbycount.aspx

Species available for investigation or comparison

Carolina Wren
American Robin
House Sparrow
Pine Siskin
Northern Cardinal
Northern Goshawk
Bald Eagle
Northern Bobwhite
Ring-necked Pheasant
Red-tailed Hawk
Ruffed Grouse
American Kestrel
Downy Woodpecker
Pileated Woodpecker
Goldfinch
European Starling
Blue Jay
American Crow
Wild Turkey
Turkey Vulture
Cooper's Hawk
Mourning Dove
Snowy Owl
Pileated Woodpecker