

Enjoying Christmas Bird Count Data on the Internet

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When Audubon published *American Birds* up to six times a year, the Christmas Bird Count (CBC) was included as one of the issues. In the early 1990s, subscriptions peaked at more than 20,000. However, when Audubon and the American Birding Association (ABA) agreed that the seasonal regional reports should appear in an ABA publication (now called *North American Birds*), the CBC issue became the only issue of *American Birds* and subscriptions plummeted to fewer than 1000.

In response, we at Audubon decided to make *American Birds* available to all paying CBC participants in the United States each year. That's probably why you've received this issue. Now, for the same budget to the CBC program, we're back to a circulation of more than 20,000.

A major reason Audubon gave up the seasonal regional reports was to concentrate its efforts on BirdSource, the web site Audubon developed in cooperation with the Cornell Laboratory of Ornithology. One of the major achievements of BirdSource has been the computerization of all 103 years of CBC data, making the data available to everyone for reading and research.

Because the data are easily available on the Internet, we felt that it made sense to omit details of individual counts in *American Birds*. As a result, we saved the costs of printing and mailing more than 550 pages per issue each year. We are able to continue to invest that money into improving the web site and other aspects of the CBC and to get the CBC story out to more of the participants.

Not surprisingly, many of the people who used to get the full 600-plus-page issue of *American Birds* were disappointed last year to get this slimmed-down version, even though we have beefed up the issue with more articles, including several with CBC data analysis. In response, we are continuing to improve the web site to make it easier to print out and review information from individual counts. Here we present a step-by-step approach to using and enjoying the data you and the other counters have collected. The following instructions will make more sense if you log onto the Internet and work through each example.

How to Print an Individual Count

It isn't practical to print out count reports for hundreds of counts; but if you have one to a dozen favorite counts, printing them out might make sense. Also, if you are planning to make a winter visit anywhere in the United States or Canada (and some places in Latin America and the Caribbean), you should consider printing out the results of the nearest CBC circle or two.

How to Create Tables, Graphs, and Maps

At this point, it will become obvious that there is a lot more you can do than just look at a single count for a single year. On the same page where you chose your region of interest, you can instead choose a species of interest. By typing in a species here and clicking on “Continue,” you can print out a list of all the count circles that had the top 100 tallies of your selected species that year, either for the whole CBC or by region (state, province, or portion of Latin America or the Caribbean). Again, you can view this report for any year of interest.

You can also switch back and forth between the full count listings and the species listings by just clicking on the count name or the species name in the table you’re looking at—handy if you’re viewing a CBC and want to quickly check on the status of a particular species reported for the season!

For other kinds of reports, you will want to return to the CBC home page (www.audubon.org/bird/cbc/index.html). You can choose “History and Objectives” to read about those topics, or you can pick “Bibliography” to see the many scientific papers that have used CBC data. But most of you will want to see “Historical Results.”

Under Historical Results, you have four choices (at the bottom of the page).

- 1) Make a graph.
- 2) Get count data by count circle.
- 3) Get count data by species.
- 4) Find a map.

Let’s review all four options.

Make a Graph

If you click on “Make a Graph” on the “Historical Results” page, you will be taken to a page where you need to make a series of choices.

- 1) You are asked to type a bird’s name. Because bird names have changed so much over the past 103 years, this simple choice can get a bit complicated, especially if you are interested in juncos.
- 2) Type in “junco” on the first line, and hit “Search.” This will fill up the next box with lots of names for juncos.
- 3) Single-click to select “Dark-eyed Junco” in the next box and hit the “Add” button.

4) Go back to the second box, select “Dark-eyed (Slate-colored) Junco” (you may need to scroll down to find it), and hit the “Add” button again. Now both names will appear in the box to the right. You can select up to five forms or species to be shown on your graph.

5) Now select a date range. You can look at a junco graph for any range of years between the first CBC and the 103rd. I often concentrate on the past 40 years, because I believe that CBC data for that time period are pretty good for most species. Also, I understand the bird names that were used after 1957 (when the American Ornithologists’ Union published its fifth checklist); the earlier names were often very different from what we use now. So, I select “63 (1962-3)” for “Start” and “102 (2001-2)” for “End.”

6) Now select a region. You can choose a state, province, or portion of Latin America or the Caribbean (all in one box); or you can choose a country; or you can choose a specific count circle. (Countries are listed in a separate box; to choose a count circle, you need to click on that option.) For this example choose the “United States” and then click on “Add.” If you also select “Canada” and click on “Add,” the resulting graph will show data for both countries combined (Figure 2).

7) Click on “Make a Graph.” In fact, two graphs will be created. One will show changes in juncos per party hour over the 40-year period; the other will show changes in the straight number of juncos. Most analysts prefer “birds per party hour” because the amount of effort on CBCs has gradually increased year after year, resulting in more birds being reported, even if bird populations haven’t changed. By correcting for party hours, any changes in the graph are more likely to reflect real changes in bird populations.

Note 1: If you created a junco graph following these instructions, you will see that the graph has two lines, one for Dark-eyed Junco and one for Dark-eyed (Slate-colored) Junco. Each year, birds are reported under both names, so you need to add the two names together to get a report for all juncos. (In Colorado and other mid-continental states, you would need to add many other names as well.) At this time, it is difficult to produce a graph that combines all juncos—we plan to make that easier as soon as possible. (Look for a notice on the web site.)

If you think that names have changed for the birds you are interested in during the time period you are interested in, then

Figure 2. Screen shot of Dark-eyed Junco and Dark-eyed (Slate-colored) Junco selections in “Make a Graph” section of “Historical Results” reports.

follow the above instructions using all possible names, because the graphs will show you which names were used in which years.

Note 2: Once you click on the final "Submit," there could be a delay, depending on the complexity of the query or the time of day.

Note 3: Once you are on the results screens, you need to use the navigation icons on that page below the graphs to move onto your next step. You should not use your browser's back button; it will not work properly.

Make a Table for a Count Circle

To make a table on the "Historical Results" page, you can choose to "Get Count Data" by count circle or by species.

- 1) If you click on "By Count Circle," you will go to a page where you are given three choices: Select a State or Province, Select a Country (other than United States and Canada), or Select a Count Code. The first two choices are provided assuming that you don't know the four-letter code for the count circle for which you'd like to see a table.
- 2) The code for our sample circle, New London, Connecticut, is CTNL; so enter that in choice three, and New London is added to the box in Step Two.
- 3) Step Three is "Select a Date Range," so again choose 63 through 102. When you click on "Make a Table," you will get a table in less than a minute. The tables are pretty large, so you will be able to see only about 10 to 12 years on your screen at one time. The table lists the numbers of birds and number of birds per party hour for every species seen on the New London count in the past 40 years.

At the bottom of the table is information on count date, weather, and effort; however, this information is not available for every CBC year. Weather and effort are available for the past five years; CBC date is available for some additional years. As a default, when CBC date is not in the database, it shows up as December 25, even though no New London counts in the past 40 years were ever done on Christmas Day.

Make a Table for a Species

- 1) If you are interested in comparing numbers in different years for a single species, you can click "By Species" under "Get Count Data" on the "Historical Results" page. This will take you to a page that offers choices just like those offered on the "Make a Map" page.

- 2) Like before, type in "junco," click "Search," then choose "Dark-eyed Junco" and "Dark-eyed (Slate-colored) Junco" from the list of names that is generated.
- 3) Choose 63 for the start year and 102 for the end year.
- 4) Then select "Connecticut" for the region. (There are too many kinds of juncos in the United States to choose it as a region for this species.)

In Connecticut, the only years with Dark-eyed Juncos were 84, 85, 86, and 102. There were Dark-eyed (Slate-colored) Juncos every year, as shown in a second table that prints below the first one. To get the true numbers of juncos in Connecticut, add the Dark-eyed Juncos to the Dark-eyed (Slate-colored) Juncos for those four years—then you will have the complete picture (other junco subspecies are pretty rare in Connecticut), and, if you want, you can make your own graph (by hand or using a different computer program).

Other Options

Once you've made either a table or a graph, it's often interesting to see the same data inquiry presented in another way. By using the buttons presented on your results page, you can quickly convert your table into a graph, or vice versa, using the "Convert to Graph" or "Convert to Table" buttons.

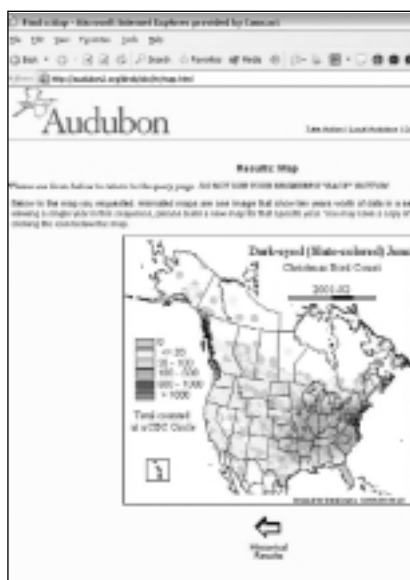


Figure 3. Screen shot of final map result for Dark-eyed (Slate-colored) Junco in the "Make a Map" section of the "Historical Results" reports.

Also, if you're interested in doing analyses of the data set you've just created on your own computer, you can use the "Download data" button to pull the information you've just selected directly to your hard drive.

Find a Map

One of the easiest (and most fun) things to do on the "Historical Results" page is to make a map.

- 1) If you click on "Find a Map," you will be taken to a page that resembles the "Make a Graph" page.
- 2) As before, type in "junco" in the first line and hit "Search"; you will get lots of names for juncos.
- 3) If you are interested in a map of recent years, select "Dark-eyed (Slate-colored) Junco" in the next box and hit the "Add" button. "Dark-eyed (Slate-colored) Junco" will appear in the right-hand box.
- 4) The mapping tool can handle only one name at a time, so go to Step Two to choose a year for the map. (Maps are currently available only from the 61st count to the present.)
- 5) After choosing a year, you may want to check the 10-year animation box. This produces a 10-year series of maps that clicks through automatically, year by year. (If you choose one of the last three years, you only get a three-year animation.)
- 6) Finally, choose a region. Maps are available for North America, or for one of 16 regions of North America. When you click "Find a Map," your map will be displayed (Figure 3).

Please note that the Dark-eyed Junco map is incomplete because most (but not all) juncos are identified on Christmas Bird Counts by subspecies, but maps for most species—and for the subspecies of Dark-eyed Junco—are very good and informative. By exploring species names in the "Make a Graph" section, you can learn which names were used in which years, which should help to avoid misinterpreting maps for species in which the names have changed.

As a CBC fan for almost 40 years, I have really enjoyed my time exploring these new analysis tools. I hope that you do as well. We are already discussing ways to improve these tools and to create new ones. Please send along your ideas to me at gbutcher@audubon.org.