

MIKE MLODINOW EXPLAINS HOW HE CAME UP WITH VALUES FOR THE STATUS OF BIRDS IN ARKANSAS (2012)

First, I determined the overall status for the state using the line graphs for frequency provided by ebird for all the data statewide. My thinking is that a bird's status is determined by its maximum frequency; other people may prefer some other criterion such as abundance or average frequency. Then I went through all the points for the 48 "weeks" of the year and wrote down, not the highest value, but the third highest (this is Freq-3). The highest values are more often due to some exceptional circumstance than are slightly lower values. So, to better compare all the species, I chose the third highest. It is a somewhat arbitrary choice, where I try to eliminate freak values, but still do not under value frequencies for species such as transient warblers that have short-lived peaks. The result here is something of a balance.

Next I classified these third highest values: I converted the frequencies via transformation, $\text{Log}(\text{Freq}_3 / 1 - \text{Freq}_3)$, which are also known as "folded logs". These provide a more reasonable criterion for distance than do the untransformed frequencies. I divided the length from the smallest non-zero folded log (from Lazuli Bunting's Freq₃ of .101%) to the highest (from Northern Cardinal's 72.603%) into 7 segments of equal length. The segment boundaries were then converted back from folded logs into percent values yielding the category boundaries: Very Rare-- 0.100% to 0.308% (I moved Lazuli Bunting's value to 0.100); Rare—0.308% to 0.943%; Very Uncommon—0.943% to 2.851%; Uncommon—2.851% to 8.298%; Fairly Common—8.298% to 21.815%; Common—21.815% to 45.674%; and Very Common—45.674% to 72.164%. This last value should have come out as that of the cardinal, but probably, because I rounded the segment lengths, came out a little short. As the starting and ending values need not be exact, I kept them as is.

I thought that it would be good to note when a species is near the category (and segment) boundary. So, when a species had a folded log value within +/- 5% of the segment length, I put the name of the nearby category in parentheses.

For species with zero values for their third highest week, I either classified them as Casual/ Accidental, or if I could determine that there were records for the state in at least three different weeks, I classified them as Very Rare. This is arbitrary, but I thought better reflected the actual situation, than would classifying all of them as Casual/ Accidental.

Next, I broke the state into 8 regions of roughly equal size, with roughly equal numbers of counties in each; and as much as possible, including the same physiographic areas. Northwest Arkansas, for example includes Benton, Boone, Carroll, Crawford, Johnson, Madison, Newton, and Washington Counties; southeast Arkansas includes Ashley, Bradley, Calhoun, Chicot, Cleveland, Dallas, Desha, Drew, Lincoln, and Union Cos. Then I determined Freq.3 for each species in each region. I then used the same category boundaries that I had used for the statewide data to classify the species regionally. This led to some frequencies that were much higher than the upper boundary of the Very Common category. So I added Very Very Common—from 72.164% to 88.881%, a segment of equal length in terms of folded logs to the others, and called any species with a still higher Freq.3 as "Nearly Ubiquitous".

That's pretty much what I did. It does show, I think, that there are significant regional differences, despite Arkansas' relatively small size, nearly square shape, and lack of dramatic geographic features.

Here's the list of counties for each region:

Northwest--Benton, Boone, Carroll, Crawford, Johnson, Madison, Newton, Washington

North Central--Baxter, Cleburne, Fulton, Independence, IZard, Marion, Searcy, Sharp, Stone, Van Buren

Northeast--Clay, Craighead, Greene, Jackson, Lawrence, Mississippi, Poinsett, Randolph

West Central--Franklin, Garland, Logan, Montgomery, Polk, Pope, Scott, Sebastian, Yell

Central--Conway, Faulkner, Grant, Hot Spring, Jefferson, Lonoke, Perry, Pulaski, Saline, White

East Central--Arkansas, Crittenden, Cross, Lee, Monroe, Phillips, Prairie, Saint Francis, Woodruff

Southwest--Clark, Columbia, Hempstead, Howard, Lafayetteville, Little River, Miller, Nevada, Ouachita, Pike, Servier

Southeast--Ashley, Bradley, Calhoun, Chicot, Cleveland, Dallas, Desha, Drew, Lincoln, Union