

Population Declines in the 2002 Chicago Area Christmas Bird count: is West Nile Virus implicated?

by William Moskoff

The West Nile Virus (WNV) was widespread in the Chicago region in 2002 and affected humans and birds (City of Chicago Dept. of Public Health 2002). Surveys of American Crows (*Corvus brachyrhynchos*) and Black-capped Chickadees (*Poecile atricapilla*) conducted by Audubon-Chicago Region and the Bird Conservation Network last summer and fall suggested that both of these species had decreased in numbers in several spots

in the Chicago area (Audubon-Chicago Region 2002). Anecdotal reports suggested that the number of Blue Jays (*Cyanocitta cristata*) had declined as well. Christmas Bird Counts (CBC), carried out between 14 December 2002 and 5 January 2003, offered a means to assess whether these earlier reports could be confirmed. If crows, chickadees, and jays were affected by WNV during the summer, then one would predict that their numbers should be lower on the 2002 CBCs and perhaps lower than historical averages. There may, of course, be other reasons, and I explore these below.

Methods

I analyzed the 2002 CBC data for eight species in the Chicago Region and compared these numbers with the counts for the 20-year period 1982-2001. I obtained data



In the Chicago region, the 2002 Christmas Bird Count for Blue Jays, American Crows, and Black-capped Chickadees declined significantly. Photo by Mary Kay Rubey.

from the BirdSource on-line database for eight Chicago area CBC circles: Waukegan, Evanston (north shore), Chicago (urban), Calumet City-Sand Ridge, Barrington, Fermilab-Batavia, Lisle Arboretum, and Thorn Creek-Park Forest (National Audubon Society 2003). These count circles encompass parts of five counties in the Chicago Region: Cook, Lake, DuPage, Kane, and Will, covering a distance of about 80 miles from north to south. My study covered the following species: Mourning Dove (*Zenaidura macroura*), Downy Woodpecker (*Picoides pubescens*), Blue Jay, American Crow, Black-capped Chickadee, White-breasted Nuthatch (*Sitta carolinensis*), Northern Cardinal (*Cardinalis cardinalis*), and American Goldfinch (*Carduelis tristis*). I excluded House Finch (*Carpodacus mexicanus*) from the

study because another disease, conjunctivitis (*Mycoplasmas conjunctivitis*), has been linked to dead finches. I also excluded Rock Dove (*Columba livia*), European Starling (*Sturnus vulgaris*), and House Sparrow (*Passer domesticus*) from the study because of their status as introduced species.

Since the total number of birds counted in a CBC is some function of the amount of effort – the more observers, the greater the likelihood of a higher count – in order to make comparisons from year to year, I used the standardized measure of the number of birds detected per party hour. The area that is covered for a CBC is a circle that is 15 miles in diameter and the birders that participate count all the birds they see or hear in a single day.

A count circle is, by definition, an arbitrary geographic area. The suspected declines in the numbers of crow, jays, and chickadees are, however, a regional problem. For purposes of analysis, therefore, I treated the eight circles as a single group. I determined the average number of individuals seen per party hour for the period 1982-2001 by dividing the total number of individuals for each species by the total number of party hours for the eight circles taken together. This is the