



Figure 1: Population trend of Blue-gray Gnatcatcher based on Spring Bird Count data.

Figure 2: Blue-Gray Gnatcatcher County presence or absence in Illinois based on Spring Bird Count data.

Figure 3: Illinois State Water Survey - Annual temperature in Illinois since 1840.

Figure 4: USDA Climate Change Bird Atlas - Future climate scenario model of Blue-Gray Gnatcatcher abundance distribution based on increasing temperatures.

During the last century, the global average temperature has increased by approximately 0.6°C and it may continue to increase rapidly (Root et al. 2003). Between 1950 and 2004, the spring maximum temperature increased 1.1° C in the northern hemisphere (Hitch and Leberg 2007). Researchers are using large avian datasets to analyze geographic changes in breeding distributions of birds throughout the world. One study used Breeding Bird Survey data to analyze distributions of North American birds (Hitch and Leberg 2007) and found that many species showed significant movement northward. This study was consistent with Thomas and Lennon (1999) from Great Britain, supporting the idea that northward expansions of multispecies groups are due to climate warming (Hitch and Leberg 2007). Illinois had a warming trend through about 1940, followed by a cooling trend until about 1980. Over the last half century the average annual temperature has increased within Illinois (Illinois State Water Survey) (Figure 3). Illinois has also had longer heat waves, less snow, and more rain (Walk et al. 2010).

It is likely that climate change will continue to be one of the biggest factors. The climate change bird atlas has

formulated future General Circulation Models showing the distributional abundance may change for Blue-gray Gnatcatchers (Figure 4). Based on this model, Blue-gray Gnatcatchers will continue to move northward if temperatures continue to increase. While this trend might seem beneficial for the Blue-gray Gnatcatcher, it may not be so for other species suffering from habitat loss and food availability. Because not all species can cope with climate change, communities of species may become extirpated with others increasing (Hughes 2000).

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— Tara Beveroth
Illinois Natural History Survey,
 1816 Oak St., Champaign, IL 61820
 beveroth@illinois.edu