

2xCO₂ climate, were then applied to the original climate variables used in developing the bird-climate models. This was done in order to correct for some of the potential errors in the climate change model itself, and is a standard practice in

climate change impact studies (versus simply using the model's projection of future climate). For example, for a given point, the difference in average summer temperature between the "current" and "future" (both model derived)

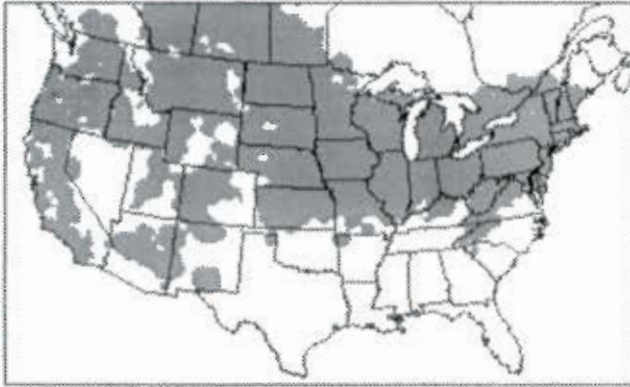
climate may be +2°C. This value is then added to the *actual* average summer temperature at that point to estimate what the climate at that point may be with a doubling of CO₂. All bird distribution models were then run using the 2xCO₂-derived climate variables. These combined bird-2xCO₂ climate models were then used to create maps of the projected possible future climatic ranges of many North American birds (see Figure 1c for an example). A more complete explanation of methods used to develop the models and maps has been published elsewhere (Price 1995, Price *in press*).

Distributional models and distributional maps have been developed for almost all North American passerine birds. What these maps actually show are areas projected to have the proper climate for the species, or *climatic range*, under conditions derived from the CCC model. While the results of the models cannot be used to look at the fine points of how a given species' distribution might change, they can provide an impression of the possible direction and potential magnitude of the change in the suitable climate for the species. The following list of potential changes to Illinois' avifauna was prepared by comparing the maps of projected summer bird climatic ranges with the information found in *The Birds of Illinois* (Bohlen 1989).

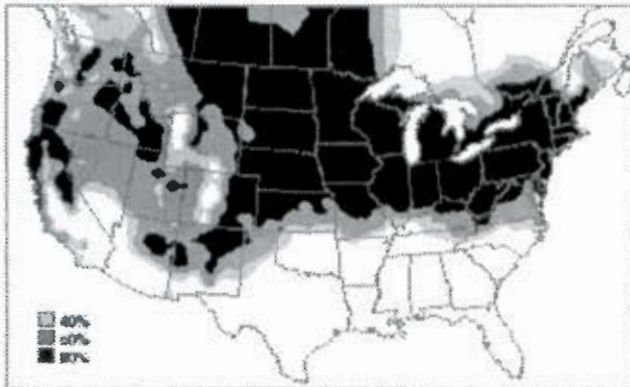
Ultimately, the greatest impact on wildlife and vegetation may not come from climate change itself, but rather from the rate of change. Given enough time, many species would likely be able to adapt to climatic shifts, as they have done in the past. However, the current projected rate of warming is thought to be greater than has occurred at any time in the last 10,000 years (IPCC 1996). This rate of change could ultimately lead to many changes in Illinois' nongame avifauna.

Figure 1: House Wren Distribution

A. Distribution (based Price et al. 1995)



B. Model Distribution (1985-1989 climate)



C. Model Distribution (2xCO₂ climate)

