

# New study shows bird population estimates are flawed

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Most of what we know about bird populations stems from surveys conducted by professional biologists and amateur birdwatchers, but new research from North Carolina State University shows that the data from those surveys may be seriously flawed – and proposes possible means to resolve the problem.

Bird populations are the focus of thousands of environmental research and monitoring programs around the world. A group of researchers led by NC State's Dr. Theodore Simons has been evaluating factors that confound estimates of bird abundance. For example, background noise can influence the ability of observers to detect birds on population surveys, and can result in underestimates of true population size.

In order to explore these questions, Simons and others worked to develop "Bird Radio:" a series of remotely controlled playback devices that can be used to accurately mimic a population of singing birds. Researchers could then control variables, such as background noise, to see whether it affected birdwatchers' ability to estimate bird populations.

The study found that even small amounts of background noise, from rustling leaves or automobile traffic, led to a 40 percent decrease in the ability of observers to detect singing birds. What's more, said Simons, "we also learned that misidentification rates increased with the number of individuals and species encountered by observers at a census point." In other words, the researchers found that traditional means of estimating the abundance and diversity of bird species are flawed due to

complications such as background noise and the accuracy of the data observers collect on surveys of breeding birds.

But the Bird Radio research also points the way toward possible solutions. Simons explains that the Bird Radio findings are helping researchers develop better sampling methods and statistical models that will provide more accurate bird population estimates. For example, researchers are attempting to identify data collection methods that will help account for background noise or other outside factors in estimating bird populations.

The research, "Sources of Measurement Error, Misclassification Error, and Bias in Auditory Avian Point Count Data," is published in the upcoming book "Modeling Demographic Processes in Marked Populations Series: Environmental and Ecological Statistics, Vol. 3" (Springer, 2009).

Source: North Carolina State University

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