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# Abundance and Trends of Woodpecker Populations in the Wright State Biology Preserve

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keeping a food diary as a strategy for losing body fat. We are testing three levels of accountability including 1) keeping a private food diary, 2) keeping a food diary that is analyzed by the research team, and 3) keeping a food diary that is analyzed by the research team with nutritional quality data returned to the subject. We hypothesize that the increased accountability with each of these levels will correlate with an increase in body fat loss. Body fat is measured using air displacement plethysmography (BodPod®) at the beginning of the study and every third week for the nine week duration of the experiment. Our control group (same measurements, but no food diary kept) showed no change in body fat ( $P>0.05$ ), but the experimental groups are currently too small for statistical analysis of the correlation between the level of accountability and body fat loss. The experimental groups together show a small decrease in body fat (1-2 % loss). We conclude that habitually keeping a food diary with any accountability for nutritional intake will be a simple, useable strategy for body fat loss in the general population. Supported by Wright State University's Undergraduate Research Opportunities Program (CKC) and WSU's Women in Science Giving Circle Grant (LKH).

**Abundance and trends of woodpecker populations in the Wright State Biology Preserve**

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**Faculty Mentor:** Tom Rooney  
**Department:** Biological Sciences

Wildlife population monitoring plays a critical role in identifying long-term environmental change and its potential impacts on biodiversity. We have now completed 4 years of winter population monitoring of woodpeckers (family Picidae) in the 80 ha Wright State Biology Preserve. Data have been

collected annually using a standard point count protocol at 15 points along an established route, with ten routes completed each winter. To date, we have encountered 0.73 downy woodpeckers, 0.33 red-bellied woodpeckers, 0.27 hairy woodpeckers, and 0.133 pileated woodpeckers per route survey. Northern flickers and yellow-bellied sapsuckers are known to be present but are below a detection threshold with this protocol. There are slight year-to-year fluctuations in woodpecker numbers, and this may be due to changes in weather, changes in the identity of observers, or sampling error. With an established baseline, we expect to see increases in woodpecker numbers in response to elevated tree mortality caused by invasive pest species (such as the Emerald Ash Borer), wind or ice storms, drought, and climate change.

**Measurement variability in STR-DNA Genotyping in Forensic Analysis**

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Short tandem repeat (STR) DNA testing has become the most powerful form of human identification in forensics. A complete match across a standard set of 13 polymorphic STR loci can be a most compelling piece of evidence. In spite of the many methodological improvements, significant challenges remain. DNA profiling is firmly grounded in metrology, and measurement variability is part of every aspect; from detection, to data interpretation, to uncertainties associated with statistical weighing of a final DNA profiling result. Reliably distinguishing between signal and noise is of particular importance as the minimum peak height thresholds used generally fail to consider variability in the sensitivity of instruments, reagents, or analyst's skill level. This study sought to quantify the