



The effect of temperature on abundance and food choice of birds at feeders in northeastern Illinois

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In 2001, more than 40 million Americans over the age of 16 watched birds around their homes and spent more than \$2 billion on birdseed (U.S. Fish and Wildlife Service 2002). As feeding birds has become more popular, the amount of scientific research on bird feeding has increased including studies on feeder and seed preferences of birds (Geis 1980, Horn 1995, Horn et al. 2002), and how weather influences feeding activity (Leck 1978). For example, Geis (1980) found that two of the most attractive seeds to birds that use feeders in Maryland are black-oil sunflower and white proso millet. Leck (1978) observed increased numbers of visits to a feeder during snowfall and temperatures below freezing.

While seed preferences, and the influence of temperature on feeder activity, have been researched, few studies have examined how changes in winter temperature may influence food choice. Different bird foods have different fat contents, and therefore, it might be expected that birds switch their diets during cold-

er periods so as to better meet their increased energetic demands. Our study examined food preferences of birds using feeders in northeastern Illinois, the effects of temperature on abundances of birds at feeders, and whether temperature influences food choice. We predicted that food preferences of birds in Illinois would be similar to those found elsewhere, and that as temperature decreased, birds would be more abundant at feeders and switch to a food with a higher fat content. Results from this study can be used to make more informed decisions about the types of foods to provide for backyard birds, and how preferred foods may change with varying weather conditions.

Methods

The study was conducted at six houses in mostly suburban neighborhoods within the cities of Downers Grove, Montgomery (2), Naperville, Rockford, and Wayne, in northeastern Illinois. At each house, four ground platform feeders were placed 3 m apart from one another in a straight line. We also attempted to place feeders at equal distances to trees and shrubs, but no closer than 3 m from the base of any tree or shrub. The platform feeders were made by Backyard Nature Products, and measured 0.52 m long by 0.52 m wide by 0.05 m tall. Each

feeder was filled with one of four different types of bird food: black-oil sunflower, white proso millet, whole peanuts, and peanut suet cakes. The foods selected are preferred foods of birds that use feeders (Geis 1980, Horn et al. 2002). Black-oil sunflower, white proso millet, and whole peanuts were filled in the feeder so that they covered the entire base of the feeder, and were several layers thick. A single peanut suet cake was placed in the feeder containing suet. Because feeder position influences bird abundance (Cowie and Simons 1991, Dunn and Hussell 1991), the food type within each feeder was rotated in a systematic order (millet ÷ suet ÷ sunflower ÷ peanuts ÷ millet, etc.) after each week. Initial food type in each feeder was established randomly.

Feeders were monitored from a window inside the house during an eight-week period from 21 January through 17 March 2002. Four 90-minute monitoring sessions took place at each house each week. With few exceptions, two of the weekly monitoring sessions began no earlier than sunrise, and ended no later than three hours after sunrise (referred to as early-monitoring sessions). The remaining two weekly monitoring sessions took place anytime from three hours after sunrise to sunset (late-monitoring sessions).

A Downy Woodpecker feeds on suet in Texico, Illinois, Jefferson County. Suet was a less popular food choice among birds in the authors' research. Photo by Bowie Hannah.