We sampled birds early and later in the day to account for possible variation in activity levels among species with time of day. An early and late monitoring session could take place on the same day, but two consecutive early or late monitoring sessions on the same day were not permitted. During each monitoring session, we recorded the maximum number of individuals of each species we could account for at each feeder or on the ground within 1 m of the feeder (e.g., if a Black-capped Chickadee, was seen multiple times flying to and from a feeder filled with sunflower seed, it would be recorded as 1 chickadee unless the observer could simultaneously see >1 chickadees in the surrounding area using the feeder. If a single chickadee was seen at a feeder and then left, and one hour later a single chickadee was seen at a feeder again, only one total chickadee would be recorded during the monitoring session (Horn 1999). Such a counting approach is conservative, and most likely resulted in undercounting the total number of individuals visiting a feeder. We also recorded the temperature before each monitoring session. If a mammal approached the feeders during the monitoring period it was chased away. We did not monitor the feeders for five minutes after chasing away the mammal, and five minutes was added on to the total monitoring time.

To determine food preferences, we calculated 95% confidence intervals of the mean abundance of each species at each feeder per monitoring session. If confidence intervals between feeders with different foods did not overlap, we considered birds to have a preference for one food over another. To determine if bird abundance at feeders changed with temperature, we calculated 95% confidence intervals of the mean abundance at each feeder per monitoring session for the total number of individuals of all species combined, total number of species, and abundances of individual species when the temperature was <0 °C and >0 °C. If confidence intervals between feeders of the same food type at <0 °C and >0 °C did not overlap, we considered temperature to influence bird abundance. Temperature was considered to influence food choice, if food preference changed from one temperature category to another, as indicated through non-overlapping confidence intervals (e.g., if Black-capped Chickadee abundance at the sunflower and peanut feeders was equal [as measured by confidence intervals] at >0 °C, but greater at the peanut than sunflower feeder at <0 °C, seed preference changed with temperature). Confidence intervals were calculated by taking the mean from all monitoring sessions from all six residences combined (n=188; the total number of monitoring sessions should have been 192, however, 4 monitoring sessions were removed from analysis because they were considerably longer than 90 minutes). We used Microsoft Excel 2000 to determine confidence intervals. Only the 10 most common species were used in the analysis.

Results

We made 6,691 observations of 22 species (Table 1). The ten most common species in decreasing order of abundance were European Starling, House Sparrow, Mourning Dove, Dark-eyed Junco, Black-capped Chickadee, House Finch, Red-winged Blackbird, American Crow, Blue Jay, and Northern Cardinal (Table 2).

Northern Cardinal and House Finch preferred black-oil sunflower above all other food types, while Blue Jay preferred whole peanuts. Mourning Dove preferred black-oil

Table 1:
Mean number of birds of each species observed per monitoring session at black-oil sunflower, white proso millet, whole peanut, and peanut suet feeders combined at six houses in northeastern Illinois during the winter of 2002.

Species	Mean[A]	SE[B]
Mourning Dove, *Zenaida macroura*	2.8	0.3
Red-bellied Woodpecker, *Melanerpes carolinus*	0.1	0.0
Downy Woodpecker, *Picoides pubescens*	0.2	0.0
Northern Flicker, *Colaptes auratus*	0.0	0.0
Blue Jay, *Cyanocitta cristata*	0.5	0.1
American Crow, *Corvus brachyrhynchos*	0.5	0.1
Tufted Titmouse, *Baeolophus bicolor*	0.1	0.0
Black-capped Chickadee, *Poecile atricapilla*	1.0	0.1
Red-breasted Nuthatch, *Sitta canadensis*	0.0	0.0
White-breasted Nuthatch, *Sitta carolinensis*	0.1	0.0
European Starling, *Sturnus vulgaris*	23.4	1.8
Northern Cardinal, *Cardinalis cardinalis*	0.4	0.1
American Tree Sparrow, *Spizella arborea*	0.0	0.0
White-throated Sparrow, *Zonotrichia albicollis*	0.1	0.1
Dark-eyed Junco, *Junco hyemalis*	1.4	0.2
Brown-headed Cowbird, *Molothrus ater*	0.1	0.1
Red-winged Blackbird, *Agelaius phoeniceus*	0.5	0.2
Common Grackle, *Quiscalus quiscula*	0.3	0.1
Purple Finch, *Carpodacus purpureus*	0.1	0.0
House Finch, *Carpodacus mexicanus*	0.8	0.2
American Goldfinch, *Carduelis tristis*	0.1	0.0
House Sparrow, *Passer domesticus*	3.2	0.4

[A] n = 188 monitoring sessions. [B] Standard error.