in 1993-1995 had been made with an enlarged entrance as an attempt to appease and direct starling interest to these boxes as potential nest sites and limit their interference with nesting sparrows.

RESULTS:

Dates of first eggs of first clutches ranged between 24 March (in 1990) and 15 April (in 1992); dates of first eggs of last clutches of season varied between 3 July (in 1994) and 1 August (in 1993). Modal clutch size was 5 eggs; ranging from 1 to 6 (mean = 4.6, sd = 0.76, n = 220). Mean egg mass was 2.78 g (sd = 0.28, n = 1086). Incubation period, measured from penultimate egg to date of hatching was 11.9 days (sd = 0.37, n = 183; 9 - 17 days); nestling period, measured from date of hatch until young left the nest, was 14.7 days (sd = 2.16, n = 134; 9 - 19 days). Mass, at age 7 days, of those young that survived to leave the nest was 19.24 g (sd = 4.55, n = 383; range 5 - 29.8 g). Included among these young were 27 raised during the cicada emergence; mean 7-day mass of these young was 23.59 g (sd = 2.92; range 16 - 29.5 g). Modal brood size was 3 young. Summary of breeding success is given in Table 1. Overall egg survival was 37% for all eggs laid (40% for eggs in completed clutches); hatching success for completed clutches was between 71% and 76% depending on minimum or maximum hatching estimates; between 49% and 52% of young survived to leave the nest.

Over all 8 years, nesting productivity, measured as young produced per egg, was 0.45. For 1990, the cicada year, survival was enhanced for those clutches active at the same time of cicada emergence; only 6 nests with young were influenced but productivity was highest of all years at 0.70 young/egg. Regular predation during two years — by a cat in 1993 taking 11 broods and by a raccoon family and, apparently, American Crows (*Corvus brachyrhynchos*) in 1995 taking 18 broods — resulted in the lowest annual productivity of all years at 0.27 young/egg in 1993 and 0.25 young/egg in 1995. A heat spell in 1995, with temperatures up to 41 C, caused deaths in two broods of half grown young.

DISCUSSION:

Broad, general descriptions and measures of nesting activity of House Sparrows are really very similar to and not unusually different from findings reported by other Midwestern studies including one I had conducted in Kansas (Lowther 1979, 1983). My subjective impressions of differences point to lower abundance and quality of food resources when compared with rural habitats, especially farmsteads with feedlot operations, and are not unexpected. Nesting starts later and ends earlier; mean clutch size is lower; general production is lower in terms of eggs laid and young produced.

Comparisons with other studies are certainly valid means to help understand patterns of variation. My Kansas study is one prime source of comparison since subjective impressions of both studies have the same source and bias. Obvious differences between this Illinois study and my Kansas work include factors of time (different years of study), location (e.g., latitude, longitude), weather (e.g., temperature, precipitation, season) and habitat (9 rural Kansas farmsteads with livestock vs. suburban residential areas). My discussion emphasizes this difference in habitat, but I have controlled for none of these other factors.

Pitt's (1979) work near Martin, Tennessee, shows a more proper design to compare differences between rural and urban sparrow populations, but his data are somewhat limited. His two sites, located 50 km apart, provided 2 years of data on nesting attempts and 1 year of comparison for nesting success. Rural birds had larger clutch sizes than suburban birds (rural: 4.9 eggs/nest, n = 40 vs. suburban: 4.4 eggs/nest, n = 33); and rural birds were more productive (rural: 66 young/166 eggs = 0.41 young/egg vs. suburban: 38/143 = 0.27 young/egg; Pitt 1979). For Homewood sparrows, clutch size (= 4.6 eggs/nest), productivity (= 0.45 young/egg) and length of season (= 98 days) are "low" compared to other rural studies. These results are what I would expect given subjective impressions of availability of food resources. Suburbia is not a high quality habitat for House Sparrows. Other Midwest studies, from south to north, include those of Anderson (1977, 1978) at 3 farmsteads near Portage des Sioux, Missouri; Will (1969, 1973) at 2 feedlots near McLeansboro, Illinois; North (1973) at Coldspring, Wisconsin, a rural village of 12 houses; and Anderson (1994) at 4 dairy farms near Pellston, Michigan. Brief summary information for these studies are tabulated in Table 2. Patterns are hard to see. Clutch size in

Ten-day-old nestling from box GO3 on 6 May 1995. Four eggs were laid and 3 hatched about 26 April. Two young survived until 11 May when predated by raccoons. Photo by Peter Lowther.