

NATURAL HISTORY OF THE MONK PARAKEET IN HYDE PARK, CHICAGO

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ABSTRACT.—We studied Monk Parakeets (*Myiopsitta monachus*) in Hyde Park, a residential community in Chicago, Illinois. In April 1992, 64 birds were counted at 26 nests in trees, on utility poles, and on an antenna tower. The population increased to 143 birds in July after nestlings fledged. The following spring, 95 birds were still present at the beginning of the breeding season. Both regionally and locally, the dispersion of nests was clumped. Nesting structures contained one to seven active chambers. The parakeets usually foraged in groups of two to 55 birds on plant buds, weeds, and fruits and berries of ornamental shrubs and trees. During the coldest months of the year, December to February, the birds fed almost exclusively on bird seed at backyard feeders. The generality of the Monk Parakeet's diet, their ability to adapt to a variety of habitats, and their apparent great potential for rapid population growth suggest that they will continue their range expansion and population increase in the United States. Received 22 Aug. 1994, accepted 1 Feb. 1995.

The Monk Parakeet (*Myiopsitta monachus*) was introduced into the United States in the late 1960s. A removal program was carried out by the U.S. Fish and Wildlife Service from 1970–1975 (Neidermyer and Hickey 1977), but the species is now widespread in distribution and locally abundant in many localities. On the 1992–1993 Audubon Christmas Bird Counts (CBC), 1343 individuals were recorded in seven states: Connecticut, Delaware, Florida, Illinois, New York, Oregon, and Texas (LeBaron 1993). Monk Parakeets are also known to occur in six other states as well: Alabama, Colorado, Louisiana, New Jersey, Ohio, and Rhode Island (Enser 1992; Summerour 1990; Pruett-Jones, unpubl. records). The Monk Parakeet now appears to be the most abundant and widespread naturalized, non-native parrot species in the United States (see Lever 1987).

Despite their expanding distribution, Monk Parakeets have received little study in the United States. This lack of research is noteworthy considering the status of the species as an agricultural pest in parts of South America (Bump 1971, Bucher et al. 1992). Additionally, the Monk Parakeet is unique among psittacids in that it builds a stick nest, the nests of several pairs may form a large compound nest, and individuals use the nest for roosting throughout the year (Forshaw 1989). The Monk Parakeet is thus a species that should prove extremely interesting, from a behav-

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ioral and ecological standpoint, and one that should be monitored in relation to its potential economic effect on agriculture.

In Chicago, Monk Parakeets were first observed flying free in 1973, and by 1979–1980 they were breeding in Hyde Park. In 1988, the U.S. Department of Agriculture announced plans to destroy this colony, but opposition and a threatened lawsuit by community residents ultimately prevented this. Besides the Hyde Park colony studied here (Fig. 1), the Monk Parakeet is breeding at two other locations in northern Illinois: Bensenville, a suburb west of Chicago where three to five birds have been seen at one nest, and Zion, in the northeastern corner of the state, where two to three birds and one nest have been reported (pers. obs., and pers. comm. from Chicago area bird watchers).

In this study we quantified abundance, nesting dispersion, seasonality of breeding, and diet of Monk Parakeets in the Hyde Park population. Our goal was to establish a population count against which future censuses could be compared and to make observations of natural history of the species in an urban setting. Chicago is not the northern most location where Monk Parakeets occur, but it may be the most severe in terms of winter weather. Understanding the biology of the parakeets in Chicago may help elucidate some of the factors responsible for their population increase in the United States generally.

METHODS

We studied Monk Parakeets from April 1992 to September 1993 in the Hyde Park and Kenwood communities which are approximately 12 km south of Chicago's city center. The study area was approximately 9 km² in size and encompassed the entire breeding area of the Hyde Park population of parakeets. It was bounded by 51st Street on the north, 67th Street on the south, Lake Michigan on the east, and Martin Luther King Jr. Drive on the west (Fig. 1). This is a densely populated residential area, but there are open spaces and parkland along the shore of Lake Michigan and in Washington and Jackson Parks (Fig. 1).

Because nesting sites and a given "nest" of Monk Parakeets can involve more than one pair of birds, it is important to clarify terms. We refer to a "nesting area" as a site where one or more nesting structures were located and sufficiently close together that the birds nesting there would normally be in visual contact with each other. The set of birds nesting at each nesting area is equivalent to what Bucher et al. (1992) refer to as a colony. We refer to a "nesting structure" as a stick structure that contained one or more chambers. We refer to an "active chamber" (see Navarro et al. 1992) as a cavity in a nesting structure that birds visited or occupied at any time during a census period.

The nesting structures of Monk Parakeets are both large and conspicuous. We first located all nesting structures on the study area and then censused each site at least every two weeks throughout the study. On each census, we recorded the number of nesting structures, the number of active chambers in each structure, and the maximum number of birds at the nesting area. We spent 30–120 min. at each site during each census and made general observations of the birds' movements, occupancy of cavities, social interactions, nesting building and repair, etc. On a monthly basis, the maximum total number of birds utilizing all sites combined was summed as an estimate of total population size.

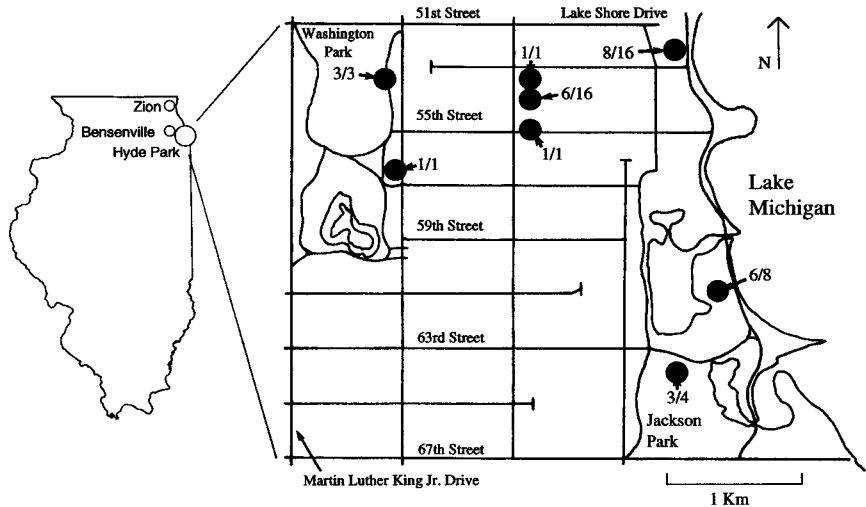


FIG. 1. Distribution of Monk Parakeets in northern Illinois and dispersion of nesting structures in Hyde Park, Chicago, during June 1992. In the Hyde Park map, each darkened circle represents a nesting area. The numbers pointing to each area refer to the number of nesting structures/active chambers in each area. Not all of the residential streets are shown.

We recorded foraging behavior on an opportunistic basis. Every time a foraging bird or group was seen, we noted location, food source, and size of the foraging group. The residential areas and lakefront outside of the study area were occasionally, but not systematically, searched for foraging parakeets.

This study was strictly observational in nature; none of the birds was banded. Although this limited some aspects of the study, we did not assume that we knew the identity of birds when conducting censuses and making other observations. The contents of nests were not physically examined nor were nestlings banded. Fledglings were nevertheless recognizable because juveniles have a whitish area of skin around their eyes; in adults at least one year of age (i.e., all other birds in the population at the start of the study) this area of skin was grayish or generally dark in coloration.

RESULTS

Population census.—A total of 64 birds was counted during April 1992, the first month of census (Fig. 2). Juveniles began to fledge in June, and the population peaked at 143 individuals in July. After July, numbers of individuals declined, presumably because of high mortality of juveniles. By March 1993, the population count was 95 individuals, representing a 46% increase from 1992 to 1993. In September 1993, the last month of census, the population was again large, numbering 171, because of the influx of fledged juveniles.

Distribution of nesting structures.—Thirty nesting structures were found in nine areas in 1992, and 24 nesting structures were located in

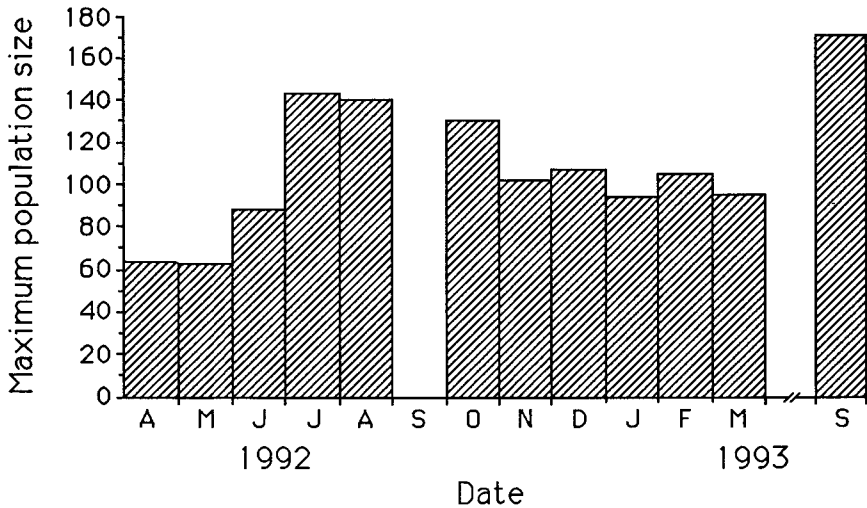


FIG. 2. Monthly population censuses of Monk Parakeets in Hyde Park, Chicago. For each month, the bar graph indicates the maximum number of parakeets observed at all nesting sites combined. No censuses were conducted during September 1992 and from April to August 1993.

seven areas in 1993 (Fig. 1). Each of the seven areas occupied in 1993 had also been used in 1992. Single nesting structures were present at four (44%) nesting areas in 1992 and two (29%) nesting areas in 1993; all other nesting areas had two or more nesting structures. The number of active chambers per nesting structure averaged 1.9 in 1992 (range = 1–7) and 1.6 in 1993 (range = 1–4). In both years, the majority of nesting structures contained just one active chamber (Fig. 3).

Although many nesting structures persisted from one year to the next, a number of them collapsed and were rebuilt. There were also changes in the number of nesting structures at each area. For example, in Washington Park there were four nesting structures in 1992 and six in 1993; at the 53rd street site there were eight nesting structures in 1992 and only three in 1993.

Nesting structures were built in the upper portions of trees ($N = 17$, 57%), on utility poles ($N = 12$, 40%), and one nest (3%) was approximately 30 m high on an antenna tower. Of the nine different nesting areas used, six were in parks and three were in residential alley ways.

Seasonality of breeding.—Birds occupied chambers in nesting structures throughout the year. Nevertheless, repair of existing nests and construction of new sites was concentrated in the spring and summer. During 1992, nest building and repair were observed throughout the month of

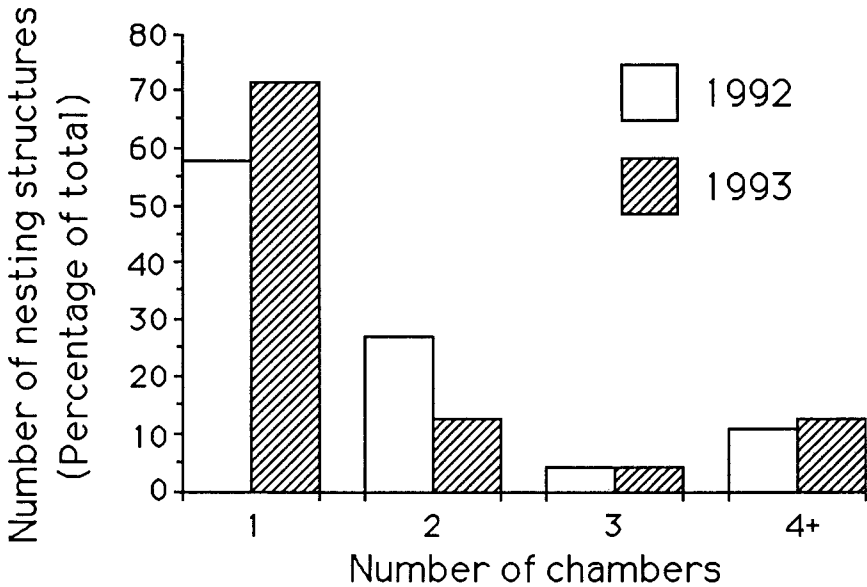


FIG. 3. Frequency distribution of the number of active chambers in nesting structures used by Monk Parakeets in Hyde Park, Chicago during 1992 and 1993.

April and then sporadically until the end of the July. Some juveniles built single-chamber structures in July 1992, but these were not subsequently occupied. In 1993, nest construction and repair began during the first week in March. Repair of minor damage to nests caused by storms was seen at all times of the year.

During 1992, copulations (four total) were observed from 24 April to 25 June. Fledging of young began on 25 June and continued through mid-August. The first two young seen were fully feathered but could not fly and were found on the ground below the nests, appearing to have fallen out of the chambers. Each of these chicks died within a few days. July 2nd was the first date in 1992 when fledglings were seen outside nests and capable of flight. After fledging, juveniles remained in association with their presumed parents and roosted in the nest chamber throughout the autumn and winter months.

Foraging and diet.—The parakeets generally foraged in groups (Fig. 4). Of 167 records of foraging birds, only seven (4.2%) observations were of single individuals. The size of foraging groups averaged 8.7 individuals (range = 1–55). For the three months prior to the fledging of young (April, May, and June), foraging groups averaged 4.7 individuals (N =

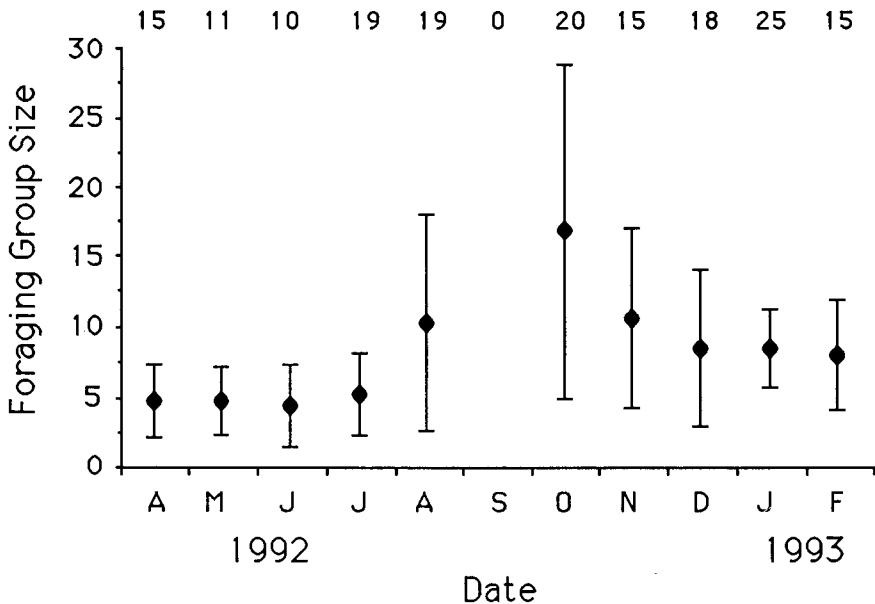


FIG. 4. Monthly change in foraging group size in Monk Parakeets in Hyde Park, Chicago. For each month, the solid circle represents the mean and the vertical bar, the standard deviation, of numbers of parakeets recorded in foraging groups. The sample sizes, the number of groups observed, are indicated across the top of the figure. No observations were made in September 1992.

36, $SD = 2.76$, mode = 3) in size. From July onwards, foraging groups averaged 9.8 individuals ($N = 131$, $SD = 7.48$, mode = 7).

Birds nesting in parks often foraged in other areas of the park away from their nests. We had no evidence that birds travelled great distances out of Hyde Park to forage. On two occasions, however, foraging birds were seen 8 km north of Hyde Park along the lake front, and we suspect that these birds were from our study area.

The parakeet's diet changed during the year. In early spring, the diet consisted of leaf buds from elm tree (*Ulmus* sp.) and weeds such as dandelion (*Taraxacum* sp.) and plantain (*Plantago* sp.). Mulberry trees (*Morus* sp.) then began to produce fruit, and for most of June and July mulberries made up the bulk of the diet. In late summer, the parakeets began to forage on various apple species, from backyard apple trees to ornamental crabapples. The apple supply began to dwindle in early November, and the birds then fed on berries of holly (*Ilex* sp.). As winter approached, holly trees provided the last natural food available, and by mid-December these trees were mostly bare of fruit. From mid-December

to the following March the only abundant food source was bird seed at backyard bird feeders of Hyde Park residents. Except for two observations of birds eating frozen holly berries, bird seed comprised the parakeets' entire diet during these two-and-a-half months.

DISCUSSION

The accuracy of our population estimates depends on the assumption that birds do not visit or occupy chambers at nesting areas other than their own. We had no evidence that birds moved between nesting areas. Birds may have foraged outside the study area, but we are confident that we located all nesting structures within Hyde Park, and we believe that this population represents the only group of nesting parakeets in the greater Chicago area.

It appears that this population of Monk Parakeets is now the largest in the midwestern United States and may be the largest breeding group of parakeets west of the eastern seaboard. The Hyde Park population may be acting as a source population from which birds disperse to other areas in northern Illinois.

On a regional basis, the population of Monk Parakeets in Hyde Park is spatially clumped (Fig. 1). The population is further divided into subgroups which consist of birds occupying each "nesting area" (Fig. 1). The birds from each nesting area foraged together, appeared to exhibit considerable social cohesion, and may comprise the important social unit.

The Monk Parakeets in Hyde Park exhibit many similar aspects of biology and behavior to entirely natural populations within their native range. The findings of Bucher et al. (1992) include, as did ours, that birds nest solitarily or in colonies, individuals occupy nest chambers the year-round, and that young birds continue to roost in nest chambers after fledging.

This study highlights the adaptable nature of the Monk Parakeet in terms of its ability to survive extreme climatic conditions and, when necessary, to adapt itself to a diet of seed provided solely by humans. The population of parakeets in Hyde Park decreased in size during the autumn (Fig. 2), but this may have been due to higher mortality of juveniles. There was no apparent loss of birds throughout the winter months, suggesting that neither the cold temperatures nor a diet of only bird seed increased mortality.

Since the conclusion of the control program by the U.S. Fish and Wildlife Service in 1975, Monk Parakeets in the United States have increased in numbers and expanded their distribution. Elsewhere (Pruett-Jones and Hyman, unpubl. data) we estimate that there are 3000 to 5000 Monk Parakeets in the United States but consider this estimate conservative.

The species is likely to continue its population increase, since Monk Parakeets are adaptable to urban and suburban habitats. They have, at least in Chicago, become endeared to city residents who are willing to go to great lengths to protect them. They also have characteristics that can facilitate rapid population growth, including a nearly omnivorous diet (see Lever 1987) and a large reproductive output (Navarro et al. 1992).

Whether the Monk Parakeet poses a threat to agriculture in the United States remains to be seen (see Neidermyer and Hickey 1977). It certainly has the potential to do so if large populations occur near grain fields or fruit orchards as has happened in South America (Bucher et al. 1992). A separate problem caused by Monk Parakeets in the United States is damage to electrical substations because of their large nesting structures. In Houston, Texas, nests are first trimmed and ultimately removed if they present a hazard (B. Baker, pers. comm.).

ACKNOWLEDGMENTS

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