

Eastern Bluebird Productivity

Nest Site Selection, and Population Dispersal at Three DuPage County, Illinois Sites

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Abstract. - From 1989 - 1991, Eastern Bluebird (*Sialia sialis*) nest success, productivity, nest-site selection, and dispersal between sites were studied in three different habitats in DuPage County, Illinois (The Morton Arboretum, McKee Marsh, and Fermilab). One-hundred and thirty nest boxes were distributed over the three sites. Very little quantitative data exist on nest-site selection, nesting success, percent of a population returning to a site, or population dispersal between sites. Discriminant analysis significantly distinguished between the three sites. The Morton Arboretum site consistently had the highest percentage of box use by Eastern Bluebirds (56 %,

3 year average), and the highest productivity as measured by number of young fledged per successful nest (3.7/nest, 3 year average). Major causes of nest failure were House Wren (*Troglodytes aedon*) competition (6.7 % the first year) and raccoon (*Procyon lotor*) predation (10.7 % the second year). Strategic placement of nest boxes was the only successful method of reducing House Wren competition without hindering bluebird

nesting. Use of a number of anti-predator devices greatly reduced raccoon predation. Data from the 624 adult and nestling bluebirds that were banded revealed a high annual turn-over rate at each study site, and a high number of nestlings that were absent during their first adult summer, but returned to their natal area to nest as second year adults. Over three years, nestlings from each of the three study sites were found at the other

two sites. Availability of suitable nesting cavities is a major factor in the ultimate size and stability of local bluebird populations but habitat characteristics, food supply, predation, and nest box competition also are important variables.



A banded Eastern Bluebird. Photo by Victoria J. Byre.

Introduction

Although scientists have conducted a number of detailed studies of the Eastern Bluebird (*Sialia sialis*) (Thomas 1946, Hartshorne 1962, Krieg 1971, Pinkowski 1977a & 1979, Gowaty 1981, Eakin 1983), many aspects of the species' life history, habitat preference, productivity, and population dispersal are still poorly understood. In Illinois for example, no quantitative data exist on life expectancy, survival rate, or mortality factors other than "nest mortality" (Graber et al. 1971). Also, very little quantitative data exist on nesting success, percent of a popula-

tion returning to a site, or population dispersal between nearby nesting sites.

In this paper we examine Eastern Bluebird populations in three separate and distinctly different habitats in DuPage County, Illinois. Data on nest success, productivity, nest site selection, and dispersal between sites are compared. Several management techniques are also suggested.

Description of Study Areas

DuPage County, Illinois, which lies approximately 43 km west of Chicago, is a heavily popu-

lated and rapidly developing section of northeastern Illinois. The three study areas, the Morton Arboretum in Lisle, IL (600 ha), McKee Marsh in Winfield, IL (240 ha), and Fermilab National Accelerator Laboratory in Batavia, IL (2800 ha), all lie along approximately the same latitudinal line and are separated from each other by 6 to 9 km of suburban development (Figure 1).