

## NESTING SUCCESS OF EASTERN BLUEBIRDS IN MYLES STANDISH STATE FOREST

by Josette Carter

As we approach our study plot, a small blue and russet thrush drops from its perch high atop one of the many electric power cables that slice through the forest. The bird alights at the entrance hole of box 32A. It is the only active nest remaining in the hushed, hot days of early August. It has been a good year for the bluebirds. With the successful fledging of this late brood, 1991 will mark the second most successful breeding season we have recorded in Myles Standish State Forest in recent years.

The pine barrens of Myles Standish State Forest (MSSF) (Figure 1) have historically attracted one of the most concentrated populations of nesting Eastern Bluebirds (*Sialia sialis*) in southeastern Massachusetts. Frequent forest fires sweeping through the 14,600-acre tract over the centuries have created open grassy, pine-oak woods with standing dead tree habitats that have traditionally lured cavity-nesting bluebirds. Unable to excavate their own nest cavities, bluebirds seek out the abandoned nest holes of Common Flickers, and Hairy and Downy woodpeckers to lay their eggs.



Photo by D. C. Twitchell

In pre-Columbian times similar openings in the forest, created by fires or high winds, were probably the principal source of nesting habitat for the bluebird in New England (*sensu* Conner and Adkinson 1974).

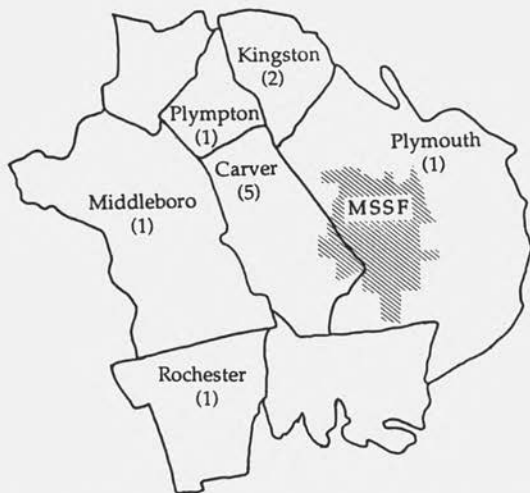
Within the past fifteen years, however, the number of forest fires in the MSSF pine barrens has decreased dramatically, and with it the number of natural nesting cavities available to bluebirds. The absence of fire's regenerative role in creating new nest sites, as older trees decay and fall, is thought to be a

major factor in bluebird declines noted in the MSSF area in the late 1970s and early 1980s.

Concern over the future of the Eastern Bluebird populations in and around MSSF brought Trevor Lloyd-Evans of Manomet Bird Observatory (MBO) and Dick Turner of the Massachusetts Division of Fisheries and Wildlife together in 1984 to launch a conservation management project promoting the protection and long-term viability of bluebird populations in MSSF and Plymouth County.

Each spring Dick Turner distributes thirty to forty nest boxes throughout the upland game management area of MSSF to attract bluebirds and other secondary cavity nesters, including Tree Swallows. An MBO field research team closely monitors the boxes each season, collecting data on nesting locations selected by bluebirds, first and last dates of egg-laying, seasonal nest success, and nest box use by other avian species. Whenever possible, bluebird nestlings are color-banded to help facilitate tracking of the resident population and assess the degree of site faithfulness evidenced by MSSF-reared birds in returning to the forest to nest in subsequent years.

Eastern Bluebirds typically raise two broods over most of their range, three broods in central portions where densities are highest, and one brood in Canada (Peakall 1970). Early in the nesting season a female may build nests in several cavities before selecting one in which to deposit her four to five eggs (Pinkowski 1974; Peakall 1970). In northern latitudes clutch sizes tend to be smaller, and throughout the range there is a tendency to lay fewer eggs as the season progresses (Peakall 1970). In eastern Massachusetts females customarily incubate their eggs for thirteen to fifteen days (Smith 1984). During the critical



**Figure 1. Number of Eastern Bluebird nesting locations reported in Plymouth County, 1991.**

incubation and nestling periods, bluebird adults depend on a constant supply of insects to feed both themselves and their young.

Since the project was initiated in 1984, we have observed eighty-four bluebird nesting attempts in boxes placed in the MSSF upland game management area (Table 1). A total of 121 bluebirds have successfully fledged from boxes within the preserve. The number of hatched young that have survived to the time of fledging each breeding season has on average increased over study years from a low of six in 1985 to a peak of thirty-two in 1988. Recent years, 1988-1991, have been years of greatest productivity.

Tree Swallows, often found nesting in close association with bluebirds, have occupied the majority of boxes in MSSF each year. Eastern Bluebirds, the second most common nester, have seasonally claimed between fourteen and forty percent of the potential nest sites.

We have found no correlation between the percentage of boxes occupied by bluebirds each breeding season and the number of fledged young produced annually. In 1985, for example, forty percent of the boxes in MSSF contained bluebird nesting materials at some point during the nesting cycle, but the number of nestlings that survived to fledging was relatively low when compared with other years when bluebirds used fewer boxes.

Among the apparent causes of failed nests in MSSF are extreme weather conditions, blowfly larvae (*Apaula sialia*) infestations, predation, vandalism, and competition for nest sites from House Wrens and possibly Tree Swallows. Heat stress was implicated in the death of at least one brood in 1984 (Smith 1984).

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**Table 1. Eastern Bluebird nesting success, Myles Standish State Forest.  
1984-1991**

Year	Number of Nests	Number Successful	Number Fledged
1984	8	4	9
1985	13	6	6
1986	9	4	8
1987	11	2	6
1988	9	9	32
1989	11	6	21
1990	10	5	14
1991	13	8	25
Total	84	44	121

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Most bluebird nest failures have occurred early in the season, when the compounding effects of prolonged rains and cold temperatures have resulted in delaying nesting, nest desertion, or starvation. On average, the greatest number of hatched young in MSSF has survived in years when cumulative rainfall, April through July, was lowest.

An infestation of blowfly larvae, small blood-sucking nest parasites that attach themselves to nestlings slowly sapping their reserves, was believed to be the primary cause of mortality of six, and possibly seven, bluebird young in 1988. Blowfly larvae were found in several nests again in 1990 and 1991, but had less damaging effects and did not result in any known fatalities. On one occasion when larvae were removed from a nestling and pine nesting materials, the entire brood consisting of three young successfully fledged the nest.

Evidence of predation within the study area has been minimal, and cowbird parasitism or competition from cavity-nesting European Starlings or House Sparrows has not been observed. In three instances broken eggs have been found on the ground directly below nest box entrance holes, but the source(s) of damage are unknown.

Although vandalism has not been an ongoing problem in MSSF, five bluebird nestlings were killed in the project's first year when an off-road vehicle drove over three pole-mounted nest boxes. Twenty-two percent of the bluebird young hatched that year were killed in this single destructive act (Smith 1984)

Given the limited number of observer hours, it has been difficult to determine the full extent of Tree Swallow and Eastern Bluebird aggressive interactions and possible competition for nest sites. Bluebird nesting materials have been found buried beneath several active Tree Swallow nests in the last eight years, but these nests may have already been abandoned by bluebirds. Additional competition exerted by House Wrens for nesting sites has been more severe in some years than in other years. As many as seventy-four percent of the boxes erected in 1991 contained the twiggy nesting materials of House Wrens at some point during the nesting cycle.

The good news coming from our research is that some bluebirds fledged from nest boxes in MSSF are returning to breed. In 1991 two bluebirds wearing color bands, one female and one male banded as nestlings in previous seasons, paired with unmarked birds in the study area.

The presence of a stable or expanding bluebird population in MSSF and scattered reports of nesting bluebirds from the surrounding communities indicate that the Eastern Bluebird is becoming reestablished in Plymouth County. Regional recolonization efforts are also being enhanced by private land owners, including several local cranberry growers, many of whom maintain bluebird boxes and trails. Active bluebird nesting locations in Plymouth County from which we received reports in 1991 are indicated in Figure 1.

The observatory welcomes reports of marked and unmarked bluebirds from

birders' and others interested in the survival of Eastern Bluebirds in southeastern Massachusetts. Such information will enable us to better evaluate the extent of suitable bluebird habitat in Plymouth County beyond state forest boundaries.

A slide program is now being prepared on the MSSF Bluebird Project. For further details write or call Manomet Bird Observatory, P.O. Box 1770, Manomet, MA 02345, telephone 508-224-6521.

#### References

- Connor, R.N. and C.S. Adkisson. 1974. Eastern Bluebird Nesting in Clearcuts, *J. Wildl. Manage.* 38:934-935.
- Peakall, D.B. 1970. The Eastern Bluebird: Its Breeding Season, Clutch Size, and Nesting Success, *The Living Bird* 9:239-255.
- Pinkowski, B.C. 1974. A Comparative Study of the Behavioral and Breeding Ecology of the Eastern Bluebird (*Sialia sialis*). Ph.D. Dissertation, Wayne State University, Detroit, Michigan.
- Smith, S. 1984. MBO Special Report: A Study of the Eastern Bluebird in Plymouth County, Massachusetts.

**JOSETTE CARTER**, a staff scientist at Manomet Bird Observatory (MBO), works in both the Landbird and Shorebird programs. She has a special interest in migrant species on the decline in the northeast. Josette recently authored the Upland Sandpiper species account in the *Migratory Nongame Birds of Management Concern in the Northeast*, a joint project of the Natural Heritage Program and the U.S. Fish and Wildlife Service. The Myles Standish State Forest Bluebird Project is directed by Trevor Lloyd-Evans of MBO's Landbird Program with funding provided by the membership. The many long hours of field work required to conduct this study were generously donated by D. Blais, Kim Pinto, Jim Kowalsky, Scott Smith, and D.J. Sweetser.

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