Use of Roadside Plantings by Songbirds for Nesting

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ABSTRACT

Nesting frequency by songbirds in various tree species was studied along I-79 in West Virginia. A total of 554 trees, 278 coniferous (4 species) and 276 deciduous (13 species), were examined for bird nests. Trees were planted in 1973 and were examined for nests during 7 years from 1974 to 1983. A total of 237 nests were located, 196 in coniferous trees and 41 in deciduous trees. The number generally increased from 16 in 1974 to 54 in 1983. The most preferred tree species were cedar (Juniperus spp.) of which 19 percent contained nests, and Austrian pine (Pinus nigra) of which 16 percent contained nests. The most preferred deciduous species were red maple (Acer rubrum) (8.7 percent with nests), pin oak (Quercus palustris) (8.1 percent with nests), and amur maple (Acer ginnala) (7.1 percent with nests). The bird species that most commonly nested in right-of-way trees were robins (Turdus migratorius) and chipping sparrows (Spizella passerina).

Most limited-access, high-speed highways have a variety of trees planted in their rights-of-way. The main purpose of these plantings is to improve the aesthetics for persons traveling the highways. A secondary benefit involves their use by wildlife.

The purpose of this paper is to compare the nesting frequency of songbirds (one aspect of wildlife usage of roadside trees) in various species of trees and shrubs. The study discussed in this paper was conducted along I-79 (90 percent rural and 10 percent suburban) in northern West Virginia. A total of 554 trees representing 17 species were examined along a 24-mi segment of highway in Marion and Monongalia counties (Table 1). Of the 554 trees examined, 278 were coniferous (4 species) and 276 were deciduous (13 species). Trees and shrubs were 1 to 2 m high when planted in 1973 as part of the landscaping contract let by the West Virginia Department of Highways. Some trees were located in interchanges but most were adjacent to the Interstate. Areas around most trees were mowed annually. Thus, the vegetation was usually less than 0.5 m high. Several trees that were originally selected for the survey died during the course of the study. When this occurred, nest data relating to those trees were discarded.

Trees were searched for nests in November. When nests were located, data were recorded for tree species, tree height, nest height, and nest construction. Nests were removed after appropriate data were collected. Two hundred thirty seven nests were located during the 7 years that trees were surveyed (Table 1). The number of nests generally increased from 16 in 1974 to 54 in 1983 (Table 2). This increase corresponded to an increase in tree size. Mean tree height increased from 1.79 m to 6.76 m,

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TABLE 1 Relative Use of Trees Planted Along an Interstate Highway by Songbirds for Nesting

Species	No. Surveyed	No. of Nests Found	Percent[a] with Nests
Coniferous			
Norway spruce *(Picea abies)*	166	92	7.9
White pine *(Pinus strobus)*	39	15	5.5
Cedar *(Juniperus spp.)*	37	49	18.9
Austrian pine *(Pinus nigra)*	36	40	15.9
Subtotal	278	196	10.1
Deciduous			
Redbud *(Cercis canadensis)*	43	0	0
Bradford pear *(Pyrus calleryana)*	40	0	0
Hawthorne *(Crataegus spp.)*	35	1	0.4
Poplar *(Tilia spp.)*	28	2	1.0
Crabapple *(Malus spp.)*	21	2	1.4
Elaeagnus *(Elaeagnus spp.)*	20	4	2.9
Viburnum *(Viburnum spp.)*	18	1	0.8
Red maple *(Acer rubrum)*	18	11	8.7
Dogwood *(Cornus florida)*	16	4	3.6
Amur maple *(Acer ginnala)*	12	6	7.1
Sugar maple *(Acer saccharum)*	12	4	4.8
Pine oak *(Quercus palustris)*	7	4	8.1
White oak *(Quercus alba)*	6	2	6.1
Subtotal	319	41	2.1
Total	597	237	6.1

[a]Based on total years.

TABLE 2 Location and Height of Songbird Nests Found in Trees Planted Along I-79

Year	Number of Nests Located			$\bar{x}$ Nest Height (m)	$\bar{x}$ Tree Height (m)
	Coniferous	Deciduous	Total		
1974	16	0	16	0.70	1.79
1975	16	1	17	1.26	2.28
1977	25	2	27	1.33	3.10
1978	22	4	26	2.82	3.53
1980	46	11	57	2.08	4.05
1981	32	8	40	2.18	4.58
1983	39	15	54	3.54	6.76
Total	196	41	237	-	-

Note: Tree height refers only to those trees having nests.

and size and number of branches also increased. Mean nest height increased from 0.70 m in 1974 to 3.54 in 1983.

One hundred ninety six nests were located in coniferous trees and 41 nests were located in deciduous trees (Table 1). A mean of 10.1 percent of all coniferous trees contained nests, compared with only 2.1 percent of all deciduous trees. The most preferred tree species was cedar, of which 18.9 percent contained nests. Austrian pine was the second most preferred tree species; 15.9 percent contained nests. The most preferred deciduous trees were red maple (8.7 percent), pin oak (8.1 percent), and amur maple (7.1 percent). Redbud and Bradford pear were the most abundant deciduous trees, but no nests were found in either species.

The species of birds that constructed the nests could not always be determined. A tentative identification was made for many nests, but the only ones positively identified were those for robins (Turdus migratorius) and chipping sparrows (Spizella passerina). Observations during summer months indicated that the trees were also used for nesting by cardinals (Richmondena cardinalis), song sparrows (Melospiza melodia), bluejays (Cyanocitta cristata), and catbirds (Dumatella carolinensis). Robin nests were the most abundant; 96 (40.5 percent of total) were positively identified. These were almost equally divided between coniferous (51) and deciduous trees (45). Forty-eight chipping sparrow nests were identified, 29 (60 percent) in conifers and 19 (40 percent) in deciduous trees.

One criterion that should be used by highway departments in selecting roadside plantings is their value to songbirds. These birds present no danger to passing motorists and few birds are killed by vehicles. Preferred trees, based on songbird use, include cedar, Austrian pine, red maple, pin oak, amur maple, and Norway spruce. When considering year-round benefits, such species as hawthorne, crabapple, viburnum, dogwood, and elaeagnus may also be beneficial because of the fruit they produce.

These data represent only the first 10 years following planting. As trees grow, nesting will increase, and the relative attractiveness of different species may change. Landscaping with trees along Interstate highways and interchanges should continue, especially around rest areas where the public can enjoy the sights and sounds of songbirds building their nests and feeding their young.

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